THE AMERICAN GAS LIGHT JOURNAL

PUBLISHED WEEKLY, AT No. 42 PINE STREET.

VOLUME XCVI., No. 16.
Whole No. 1,923.

NEW YORK, MONDAY, APRIL 15, 1912.

Subscription, $3 Per Year.
$4 Canada, $5 Foreign.

INDEX TO CONTENTS, PAGE 249. . . . . ADVERTISERS' INDEX, PAGE 22.

LIBRARY OF CONGRESS.
APR 15 1912
SMITHSONIAN DEPOSIT.

Riter-Conley Manufacturing Company

STEEL CONSTRUCTION

Pittsburgh

THE UNITED GAS IMPROVEMENT COMPANY,

PHILADELPHIA.

BUILDERS OF

THE STANDARD DOUBLE SUPERHEATER

LOWE WATER GAS APPARATUS.

ACCURATE MEASUREMENT

OF

AIR AND STEAM SUPPLY

(PATENTED),

AFFORDING { PERFECT CONTROL OF GENERATOR FIRE CONDITIONS.

PRODUCING { UNIFORM RESULTS. HIGHEST EFFICIENCIES.

THE AMERICAN
GAS LIGHT JOURNAL

VOL. XCVI., No. 16. NEW YORK, APRIL 15, 1912. WHOLE NO. 1,923.

CONTENTS.

An Asterisk (*) Denotes an Illustrated Article.

*Advertising Methods and Plan Thereof, Baltimore Consolidated Gas Company. 249
Efficiency in Operating Water Gas Sets.. 249
March Meeting, New England Section, National Commercial Gas Association 250
Circulating Gas Water Heaters, by Mr. C. B. Elmer 250
Proceedings, Forty-second Meeting, New England Association of Gas Engineers—Continued from Page 244. 251
Second Day, Morning Session—Discussion on the Goeltz Paper—And an Added Question to the Subject—*The Gas White Way in New Haven, by Mr. J. Arnold Norcross—Discussion—*The Industrial Gas Appliance, by Mr. H. L. Barnes.
OFFICIAL NOTICE—
Fourth Meeting, Southern Gas Association 256
NOTICE—
Celebration of the Centenary of the Introduction of Gas as an Illuminant, Under the Auspices of the Am. Philos. Soc.; the Franklin Institute; the American Chemical Soc.; the American Gas Institute 256
The Dean is Dead 256
EDITORIALS—
Fourth Annual Meeting, Pennsylvania Gas Association—[Special Editorial Correspondence]. 256
Briefly Told 257
The San Antonio Meeting of the Southwestern Association—A Joint Meeting—Current Mention.
MANAGEMENT AND COMMERCIAL METHODS 261
Publicity Work, Edison Elec. Illuminating Company, Brooklyn, N. Y.
Recent Patent Issues 262
ITEMS OF INTEREST FROM VARIOUS LOCALITIES. 262
President Strand's Good Work—Contracts for the Cruse-Kemper Co.—Ditto for the Gas Machinery Co.—A Budget from "B."—Mr. George Dolley Goes to Logansport, Ind.—The Municipality Purchases the St. Catharines (Canada) Plant—Manager C. W. Tippy Keeps Piping—The New Haven Company Will Contest the Objection to Prepayment Meters—Mr. Meyer Goes to Roosevelt, L. I.—Proposing Gas for North Vancouver, B. C.—Appliance Display, Rudolph, Mass.—Mr. W. E. Howell Goes to Hamilton, O.—Contract for the Isbell-Porter Co.—Mr. Sewell's Promotion Manager Titzel Cuts the Rate at Lancaster, Pa.—Proposed Gas Plant for Hillsboro, Ills.—Meter Inspection Proposition, New Orleans, La.—Office Force, Roanoke (Va.) Company—The Doherty Syndicate Succeeds to Alliance, O.—The New Haven Company's Profit Sharing Plan—And Other Items.
The Market for Gas Securities 264
Meeting Times of the Various Gas Associations 264
Public Lighting Table for April, 1912 (Advertising Section) 27

Advertising Methods and Plan Thereof, Baltimore Consolidated Gas Company.

In advertising gas appliances the Consolidated Gas, Electric Light and Power Company, of Baltimore, adopts a definite plan for each appliance, in the belief that the effectiveness of its publicity is increased in exactly the same ratio as the work is concentrated; and here some Advertising Campaign Manager might "pause" to study, if only for 5 minutes. An example of the value of backing up the Company's advertising is found in a campaign recently inaugurated for the more general use of gas-fired, steam boilers. The advertising consisted of three things: First; direct communication from the Company to the prospective consumer; second, newspaper advertising; third, window display. All of which guns were fired simultaneously.

At the outset or first day of the campaign a concise circular, describing a gas-fired, steam boiler and its uses, was mailed to every possible prospect in the city. Next morning an advertisement appeared in one of the newspapers, and one of the Company's windows was devoted to a display of steam boilers with a group of photographs showing them in use in various parts of the city. With each of these circulars was inclosed a return post card. One result of this concentrated advertising was the receiving of 23 replies the following day. The reproduction of this advertisement and the window display are given herewith.

At intervals of a week, cards are mailed to this list, bearing photographic reproductions of gas-fired, steam boilers in use in various factories in Baltimore. Attached to each of these cards is a reply post card. Simultaneously, with the mailing of these cards, an advertisement on gas fired steam boilers appears in one of the newspapers.

The Company does not seek to close the bargain in this advertising, and it is in no sense independent of its industrial fuel department, being maintained simply to stimulate interest and to arouse inquiries for the use of this branch of the Commercial Department.

Efficiency in Operating Water Gas Sets.

A feature which is now recognized as one of the utmost importance, in securing the greatest efficiency from a water gas set, is an accurate regulation of the temperature of the superheater. Several years ago it was customary to guess at the temperature by eye, or approximate it by aid of a so-called blue glass pyrometer. The eye at best was a poor gauge of temperature, as no two operators ever guessed the same degree of heat, and the physical condition of the operator himself had an effect on his idea of the temperature, not to mention the change in the weather and surrounding light.

One controlling reason why temperature plays such an important part in operating any water gas set, is that, by the maintenance of the temperature at the best operating point, a minimum amount of oil only is required to produce the desired candle power. If a temperature of 1,300° F. in the superheater produces the desired results, this temperature should be maintained each run. If 1,300° is the proper temperature for a particular set, and the temperature is allowed to drop too low, an excess of oil will be required to secure the

candle power, while, if instead, the temperature is carried too high, lampblack is produced. Neither of these conditions tends to economize the operation of a water gas set.

On account of the importance of this subject, the Brown Instrument Company, of Philadelphia, amongst other makers of such instruments, made a very exhaustive study of this problem, and, after numerous experiments, have produced a pyrometer, which is absolutely accurate with constant service under the most severe conditions. The Brown pyrometer, as designed for water gas sets, is usually furnished with two thermo-couples, or fire-tubes, inserted in the top and bottom of the superheater, with an indicating instrument and switchboard, by means of which the temperature of either the top or bottom of the superheater can be instantly seen. Frequently, a recording pyrometer in the office keeps a record of the temperature on a chart, day and night, so that the superintendent can see whether his orders are being carried out at all times. These instruments have done away entirely with olden time guesswork, and have assisted greatly in increasing the efficiency of water gas machines.

March Meeting, New England Section, National Commercial Gas Association.

The regular monthly meeting of the New England Section of the National Commercial Gas Association, was held in Wesleyan Hall, Boston, Mass., the evening of March 29th. Mr. C. B. Elmer, Treasurer, General Gas Appliance Company, New York, read a very interesting paper on "Circulating Water Heaters," which paper was ably discussed by Messrs. W. B. Nichols, R. C. Ware, N. W. Gifford, A. C. Witte, C. G. Goeltz, R. A. Fancy, Chas. Hindon, Paul Whalen and Wm. MacMahon. That it pleased all was evidenced by the hearty vote of thanks passed to the author at the termination of the debate. The next meeting will be held the evening of April 26th, at Wesleyan Hall, Boston. At this session, Mr. H. A. Norton, Manager of Tufts Meter Company, Boston, is gazetted to read a paper on "The Relation of the Gas Meter Ratings to Capacities." Every gas man should become thoroughly familiar with the working parts of a gas meter, and as Mr. Norton is a past-and-present master in the arts thereof, this paper should be decidedly interesting.

The Question Box is open for the members to deposit their requests for information on any subject. Communications should be sent to Mr. C. J. Connell, Secretary, New England Section, N. C. G. A., 24 West street, Boston, Mass.

Circulating Gas Water Heaters.

[Prepared by Mr. C. B. Elmer, for the March Meeting, New England Section, National Commercial Gas Association.]

Fellow members of the National Commercial Gas Association: I esteem it a great honor to have been invited by your worthy President to present to you this evening a paper on the subject of circulating water heaters. For the purpose of classification or distinction, gas water heaters are divided into three classes: First, the circulating; second, the instantaneous; third, the automatic-instantaneous. The latter is used sometimes as a means of direct heating in conjunction with a storage system thermostatically controlled.

The method of supplying hot water by means of the circulating heater deserves much consideration, and is of special interest to gas companies for many reasons, perhaps the most important being that of the great number it is possible to install, owing to low initial cost making it attractive to the consumer of moderate means who cannot afford to purchase one of the more expensive types.

With the gas range so generally in use, and the water heater business still being only partly developed, it is readily seen that great expansion in increased gas output must come through the increased sale of water heaters, and the up-to-date new business manager in many places is realizing the great opportunity this appliance affords to accomplish his desire to increase his per diem output.

Of the estimated 600,000 water heaters in use, it is safe to say that more than 75 per cent. are of the circulating type. In order to reach the great majority of consumers, comprising the mechanic, clerk, bookkeeper and tradesman, and thus increase the number of heaters in operation, it is necessary to furnish a satisfactory device, at a moderate price, with a low maintenance repair cost, and of such efficiency as to be operated at a reasonable expense. This results in the discontinuance of the old method of the water-back coal range. It being assumed without question that the matters of time-saving, cleanliness, general convenience and comfort make the adoption of a gas water heater in these days almost a necessity.

To the builder, or landlord, of the moderate rental priced houses or apartments, the water heater found ready for use by the prospective tenant will supply an added attractiveness to the renter. It seems to me that a general campaign should be inaugurated to educate the public of the benefits to be derived from such an appliance, particularly where hot water is required quickly, whether in the bath, laundry, kitchen, sick room or for mechanical purposes. Sellers have plenty of argument ammunition in the instance of laying stress on the low cost, time required, no fires to make or watch, etc.

The use of water heaters in practice is found not only to mean the sale of gas through its own operation, but, in cases where a coal range is in use alongside of the gas range, the consumption of gas during the year is greatly increased in the range, the coal range being no longer needed as a means of heating water. In some cases it is made possible to remove a coal range by reason of installing a gas water heater, and it can readily be seen how advantageous this is, not only to the consumer but also to the gas company. It might be well for me to say that occasional complaints of high bills are due to the improper connecting of gas water heaters, and it is especially important to gas companies that a most thorough knowledge be obtained of the mechanical adaptation of the appliance.

In the early periods of heating water by gas fuel, in connection with the kitchen tank, a burner or series of burners were applied directly beneath the tank, making it necessary to heat the entire contents of the tank to obtain hot water. The length of time occasioned and the expense of heating the entire tank, when a small amount of water was required, made this method unsatisfactory. It was then found more adaptable and economical to heat a narrow column of water as contained in the kitchen tank, by means of circulating or "by-passing" the water from the low side of the tank or boiler to the top of the tank. As you perhaps all know, water at 33° F. weighs approximately 62 pounds per cubic foot, while at 212° F. it weighs approximately 59 pounds per cubic foot, showing that, as the energy of the gas is transmitted into the water, it causes it to rise from the water heater, and is piped to the top of the tank where it remains in strata above the cold water, ready for immediate use, and can be drawn as required. The hot water, accumulating gradually downward in the tank while the heater is in operation, can be obtained in a few minutes for ordinary use. The saving in time and the convenience are important for the bath and in the kitchen. If a reserve supply of hot water is needed, heat the entire contents of the tank. When sufficient hot water is obtained shut off the gas and the expense ceases. With the use of a "water-back" coal range it is impossible to "shut off" the expense, as the fuel must be permitted to burn out (wasting heat energy), thus making the use of coal more expensive.

Until recent years but few heaters were constructed of copper or brass, while, on the other hand, it is a well-known fact that although most water backs in coal ranges were constructed of cast iron, there was seldom a complaint of dirty or rusty water from the "water back." This was due to the manner in which the water was piped to the boiler, the hot water from the water back being taken from the upper side and piped into what was known as the circulation-spud on the side of the boiler, thus causing the entire contents of the tank above the spud to be heated. The hot water, in passing from the center to the top of the boiler, was practically filtered, and the heavy particles or solids were precipitated, but, with the advent of the gas water heater, it was necessary from an economical standpoint to carry the hot water to the top of the boiler so as to get immediate results. In many instances where a large tank is in use, the capacity of the tank is beyond the real requirements of the work it was set to perform, which mitigates against the successful operation of gas water heaters when not properly connected. It might be well to bear this in mind. The circulation spud on the side of the tank being approximately two-thirds of the distance from the top of the tank, by taking the inlet of the water heater from this point you thereby reduced the capacity of your tank to just that extent, and as well, made your heater more efficient by not having to circulate the entire contents of the large capacity tank through the water heater.

The demand for hot water, immediately upon turning on the faucet, has compelled sanitary engineers and plumbers to carry a line from the continuation of the hot water up-take to a direct return to the sediment line of the tank; this, of course, is what is known as the direct circulation system. Where water is heated from hot water backs this does not in a sense increase the expense to any great ex-

tent, but where gas is used it can readily be understood how important it is that this line should be shut off, for when the water is heated it would pass through the circulating pipe, and back again to the bottom of the boiler. Some of the hot water would be carried into the top of the tank as usual, but circulation would also be taking place through this line of which the tank would not receive the benefit. As the principle by which the water is circulated is the difference in its weight caused by the difference of its temperature, it is advantageous, in connecting the appliance, to keep it close beside the tank, for it is desirable to have the burner on a level not higher than the bottom of the tank, and preferably lower, while the top, horizontal pipe connection should be made as close to the top of the tank as possible to avoid forcing the lighter water downward. The great majority of gas water heaters are connected to tanks that had been previously in use. This necessitates cutting into the pipes at top and bottom outlets of the tank, and inserting tees, etc., at expense and inconvenience. The boiler manufacturers should be made alive to the desirability of putting a spud or inlet a few inches from the top of the tank, which would simplify the piping and add to the efficiency and lessen the time in obtaining a few gallons of hot water quickly at the top of the tank.

To avoid rust, and to add to the life of the heater and its connections as well, it is desirable to use brass altogether in making connections. A draw-off cock should always be provided, but where there is trouble from sediment and rusty water it is well to close up the end of the cold water tube inside the tank and place a number of openings in the pipe, near the bottom around the sides, thus preventing the rush of the water as it enters the tank from stirring up any rust or deposits at the bottom of the tank.

The cast iron heater, by reason of its causing rusty water, was found unsatisfactory, and in some localities was very short lived. It was soon displaced by the cast brass, while to-day a copper coil as a heating medium is generally recognized as being quicker of action, more efficient, durable and satisfactory, and of moderate initial cost. The form of a coil presents the greatest heating surface for the amount of metal. Taking silver as a standard of heat conductivity of metal, with a percentage of 1,000 it is seen that conductivity of iron runs from 240 to 500; brass, 760; while copper has a heat conductivity of 890. This high percentage heat conductivity, as the copper coil possesses a thinner, non-corrosive metal wall, it will be found more economical in operation and quicker of action, at the same time maintaining a constant high efficiency, where with a cast iron or alloyed metal the efficiency is shown to deteriorate rapidly with use.

For heating a quantity of water rapidly, for the bath or laundry purposes, it is desirable for the sake of efficiency to have a heater of rapid circulation, accumulating a larger quantity of hot water of medium temperature rather than circulating a small quantity of very hot water and carrying it slowly to the top of the tank, at a very high temperature, for the reason that the radiation greatly increases over 120°, thus increasing the cost of operation. It is always well to keep in mind that the temperature of bath water is from 98° to 100°, that for dish washing being hotter and running from 115° to 120°. Therefore, except in special cases, where extremely hot water is required, ¾-inch water connections should be used on heaters of medium size, while a powerful, scientifically constructed heater, consuming from 75 to 80 feet of gas per hour, should be made with 1-inch water connections, and 1-inch piping be used in the installation. For example, on heaters connected to a 30-gallon tank that I have tested with a single ½ inch coil, I found it to take 2½ hours to make the entire circulation, whereas, with a single ¾-inch coil, it took 1 hour and 12 minutes; with a single 1-inch coil it required but 50 minutes, and with the same amount of gas consumption, the latter was somewhat more rapid than a double ¾-inch coil. A heater with a ¾ inch inner and 1-inch outer coil, with 1 inch water connections, I find to completely circulate in about 32 minutes. A good circulating water heater, if properly connected, should supply hot water for a moderate sized bath tub as fast as the tub can be conveniently used. A medium sized heater, properly connected to the tank, after burning a few minutes and being continuously used, will be found to pass upwards of 1 gallon of water per minute, raising the water 60° above the initial temperature, while a circulating heater of large capacity will be found to supply nearly 2 gallons per minute.

In my practice and experiments with a heater of medium size, I have found a single 1-inch coil to be more rapid and economical and more satisfactory than heaters of other design. A 1-inch tube being 77.78 per cent. greater in area than a ¾-inch tube, and as the hot water rises as fast as heated unless retarded by friction, I have found the larger area of tubular coil to circulate to better advantage. In former years many gas companies installed heaters with a 30-foot gas consumption. With the improvement in heater construction it is now found more economical, and much more satisfactory to the user, to burn more gas for a shorter period to obtain a given amount of water. Whereas years ago it required upwards of ½ an hour to obtain enough hot water for a bath in a medium sized bath tub, now, under favorable conditions, enough can be obtained with a medium sized heater in less than 20 minutes, and in even much less time with the heaters of greater consumption, say of 75 to 80 cubic feet capacity, with 1-inch water connections.

The "Simplex" heaters which I show here are made in three sizes; the smaller with a single ¾-inch coil; the medium size with a single 1-inch coil, which I find to be of high efficiency and of rapid circulation, are made with ¾-inch water connections. While the largest size has a ¾-inch inner and a 1-inch outer coil, having the circulating capacity of a triple ¾-inch coil, and provided with 1-inch water connections. The method of controlling the heat currents by baffle and deflector plates is such as to envelop the entire coil and fully utilize the heat before permitting it to be discharged through the vent. Heaters tested under the same conditions, and similar in construction, are apt to show a flue temperature in favor of the most efficient heater, especially so when considering the rapidity of circulation. Removable and easily accessible parts, simple in construction, are desirable for cleaning and for convenience in making repairs when needed. The burner should be constructed so as to allow a proper mixture of air and gas to give perfect combustion, and should be provided with interchangeable spuds for varied consumptions and pressures. The burners should be made with drilled holes, and the metal wall containing the drilled holes should be of extra thickness as a precaution to lessen the tendency to flash back.

A flat-faced shutter, held in position with a locknut and attached to a drop shank air mixer, is found to be less susceptible to drafts of air, and is positive of operation. The cast jacket heater, well japanned and with small loss of radiation, is more lasting in appearance and costs less to maintain than the Russia jacket which, under some conditions, soon rusts out and is so easily dented.

With the front half of the cast jacket acting as an open door the heater is simple of operation and exposes the burner for lighting, thus permitting the user to see exactly the whole operation; and it is much more convenient, safer, and less confusing to the uninitiated than the old method of pilot lights. A scallop on the collar of the heater vent is essential as in cases where there is no flue connection. It forms a safeguard against the interfering with the escape of the products of combustion, when a vessel is placed over the outlet, and the scallops should be of such depth as to be effective.

With the need and demand of the public for good gas water heaters, such as can be safely recommended at the present state of the gas water heating art, and with the large and important place in the gas industry, as regards the consumption that the gas water heater occupies, it should be of great interest to gas companies to make special effort to largely increase the number of gas water heater installations.

[Official Report Furnished by the Secretary—Continued from Page 244.]

FORTY-SECOND MEETING, NEW ENGLAND ASSOCIATION OF GAS ENGINEERS.

Held in Young's Hotel, Boston, Mass., Feb. 14 and 15, 1912.

Second Day—Morning Session.

Discussion on the Goeltz Paper.

Vice-President Barnum—What was the objection to putting in expansion joints in the first place?

Mr. Goeltz—Mr. Shattuck, through the Delaware County district, just south of Philadelphia, had a lot of expansion joints, the Dresser sleeve and also the short Dresser couplings, and it was necessary some time ago to relay a 4-inch line, taking it up, replacing it with a 6, and they found deterioration in the rubber gaskets. They have had a lot of trouble keeping their joints tight all through that county, and have taken many of them out, putting in flanges. We felt that if we could crowd the pipe into the ditch, getting rid of the effects of the result of all our contraction through this winter, we would no longer have any need of taking care of expansion, and it gives us an absolutely tight line. There being no necessity for expansion joints,

we thought we would rather get rid of them; or Mr. Shattuck, the engineer in charge, did.

Mr. Witherby—What do you find your percentage of loss is?

Mr. Goeltz—Our loss would mean practically nothing now to the percentage of gas sent out, having 52 miles of main and only about 350 meters; but we did get a figure. We reduced the main to 3-inch, which is common practice, I believe, and found that, during the first 2 weeks of our operation, taking the hours from 1 A.M. to 4 A.M., and assuming that all loss of pressure in the main was lost gas, the loss figured 56,000 cubic feet per year per mile of 3-inch main. Now we have reduced it to 3 inch, by exposed area or leakage area. I don't know just how that compares with some others. I have known a few that had over 100,000 a year per mile of main.

Mr. Witherby—What do you consider is good practice, or what would be considered good practice?

Mr. Goeltz—No loss.

Mr. Witherby—Under ideal conditions, but not practicable?

Mr. Goeltz—I think it is obtainable in steel or welded pipe lines, and I don't believe it is going to be very long before we will have quite a lot of it. That is, it is anticipated now that there might be quite a number of miles of the extension of this same line welded in the trench, and that should be bottle tight. That is the gas man's ideal, I believe, and I think it is possible.

Mr. Witherby—Then the only loss you would get would be the compressible parts of the gas?

Mr. Goeltz—Another thing with leakage. We have used about 8 fittings in the line, extra heavy steel tees. For instance, we have an 8-inch by 6-inch. It has been necessary to calk all 3 joints on the tee. That is the only one we have had to go to yet, but we are going to weld all of them in the spring.

Mr. Witherby—What pressure do you carry normally?

Mr. Goeltz—About 20 pounds. Our lines are tested for 65.

Mr. Witherby—Will it hold up on a 65 pound pressure for an hour's test?

Mr. Goeltz—They have held up. With a 24-hour test we had a loss of 7 pounds. Some of that was due to condensation. We know that we had leaks, and those leaks have been repaired. We made one mistake which was quite serious in installing service clamps. You can understand that, in a force of 700 men, picked up at random, there were many green hands, and one result was a number of service clamps not properly installed. These will have to be gone over in the spring. We used the one strap saddle, and are having a number of saddle leaks which we have to look over. In screwing down the disposition is to twist the clamp. The turning of the nuts draws the thing just a little on askew, and it does not take much of that to pull your saddle up on the top of the pipe. We believe that is responsible for a number of service leaks, and think that by tapping them into true and tightening the bolts we have stopped every leak of that kind we have found. I see no reason why we will not get them all absolutely tight.

The President—Gentlemen, you will give your attention—the Secretary will read a question that will fit in with this discussion. We will take them along together.

The Secretary (reading):

> "What is the amount of condensation (in gallons) that is considered allowable per 1,000,000 feet of gas pumped into high pressure distribution lines, at 5 pounds, 10 pounds, 20 pounds pressure?"
>
> "What would be considered the fair, allowable loss in feet per 1,000,000, or percentage of loss on account of the condensed matter that is pumped or run off from the high pressure lines?"

This question is asked to get results of actual practice, not theoretical or supposed results. I might say that I wrote to several gentlemen, one of whom kindly consented to collect and edit data. I have a contribution by Mr. C. E. Paige, of Malden, Mass. I am sorry that he was called West this morning, and so I will have to read his reply.

Answer by C. E. Paige, Malden, Mass.—"Part 1: On the basis of the information secured, it has been ascertained that the gallons of condensable water produced by the compression of gas vary from 30 to 100 gallons per million feet. The quantity recovered depends on several factors, namely, the kind of gas, whether coal water, oil or mixed; the pressure to which the gas is compressed and the temperature conditions to which the gas is subjected after compression. It has been found that in a works where the gas is compressed to from 6 to 9 pounds gauge pressure, the average recovery of condensable material from a high pressure system for a period of 2 years was 48 gallons per million feet. In a works distributing gas at a pressure varying from 10 to 35 pounds gauge pressure, it has been found that the average recovery was 75 gallons per million feet of gas compressed. On tests of short duration it was found that the recovery at 10 pounds pressure was 59 gallons; while at 30 pounds this recovery was increased to 94 gallons per million feet. These figures would, of course, be affected by the original moisture content in the gas before compression, if such content were unusually high or low.

"Part 2.—The percentage of loss due to condensation, which occurs in compression at pressures from 0 to 25 pounds, is practically 1 per cent. This figure, of course, varies with the conditions above named, but for practical purposes it is generally assumed that about 10,000 cubic feet are lost per million feet of gas compressed. This is thrown down in condensation in one form or another. The above figures are based on the reports of experience from a number of high pressure systems, and no attempt has been made to go into the theoretical phase of this question, as the information requested is for the result of actual practice."

Answer by E. C. Jones, San Francisco, Cal.—"This line is 4 inches in diameter, for a distance of 28 miles, and 3 inches diameter for a further distance of 4½ miles. The gas is compressed on the San Francisco end of the line with Laidlaw-Dunn-Gordon compressors, to an average pressure of 58 pounds. The amount of gas compressed per day is approximately 250,000 cubic feet, and the tests I have made were the days when the output was exactly 250,000 cubic feet. I found with these amounts of gas a condensation of 25 gallons of benzole and 23 gallons of water, or 0 10 of a gallon of benzole per 1,000 cubic feet of gas compressed, and 0.092 of a gallon of water per 1,000 cubic feet. In answer to your second question, 'What would be considered the fair allowable loss in feet per 1,000,000, or percentage of loss on account of the condensed matter?' As far as I know this has never been determined practically, and although it is reasonable to suppose there must be some loss due to condensation, I have endeavored to measure this loss of compressing gas out of the storage holder, and measuring the gas through a St. John's high pressure meter, I find that with, proper temperature corrections, the readings of the holder and the St. John meter check up exactly. I have done this over a period of several months with some small discrepancies between the two means of measuring the gas, and none of these discrepancies would form the basis upon which to found a rule for estimating the volume of gas lost during compression. Sometimes the holder measurement would be fast; again, the high pressure meter would be fast. I understand from your inquiry that you only want practical results. I have, therefore, given you only the two above instances which are from daily experience and are reliable. They may not accord with theory, but work out in practice."

The President—Would Major Hinman please give us some facts about the difference in volume of gas on account of compression?

Major Hinman—I don't know that I can answer the question, and I would suggest that it is rather incomplete. I think for this question to be answered exactly you would want to know pretty well what sort of gas was under compression. If it was straight marsh gas, why, the amount lost in condensation would be nothing, and if it was steam benzole it might all be condensed if the temperature was low.

Mr. White—I would ask Mr. Goeltz the size of the line where the flanges pulled from the gates.

Mr. Goeltz—The flanges where the stretching took place with the bolts were one 8 and one 6. We had no trouble with contraction in any of the lines other than the 8 and 6. No; wait! That is not so. We had one 4-inch coupling (that is, the line coupling) where the pipe broke just inside the coupling and pulled about ¼ inch. When that was taken apart it showed evidence of crystallization. It might have been a poor joint at the time it was made. We there used a Dresser split sleeve and clamped it on, and will leave it there until we can dig it up in the spring. We are planning now to go back about 100 feet each way from that joint, raise the pipe out of the trench, force in a flange and crowd just as much pipe into that particular section as we can. We want to do this before all of the frost is out of the ground, and before we get any great change in temperature at that point, so that we will get it crowded into the ground while the pipe is still cold to take care of it for next winter.

Mr. White—How long do you expect this wrought iron pipe or steel pipe to last in the ground before it becomes rusted or deteriorated?

Mr. Goeltz—That is almost impossible to answer. We gave the pipe a very good coat of black paint, of asphaltum base, at the time

it was laid. After the pipe was screwed together, before lowering in the trench, we smeared the paint on very heavily, and wherever we have uncovered the pipe since then we find that the coating is good and had set and dried. It did not rub off or pull off due to filling or handling afterwards. We also find quite a lot of electrical current travelling on our lines. We have not yet taken care of it, and don't know just what we will do.

Mr. Witherby—This question of high pressure distribution is going to get more serious each year as we go along in the business. A few years ago the percentage of high pressure distribution in any fair sized works was comparatively small, but there are a number of works to-day working only on high pressure. The treatment that our friend here is giving the pipe, forcing as much into the ground as he can get to apparently cover the natural laws of contraction and expansion, and obviate any possible requirements in the way of an expansion joint, is a radically new method. Perhaps he is on the right track; I hope he is. If we can get a bottle-tight system of electrical welding or acetylene welding we have an opportunity that we have never tackled before. Then an absolutely tight system would depend only on how long the material of which the pipe is made (steel or wrought iron, as the case may be), would last in the various soils. I find in most of the works that are running combination high pressure and low pressure they are not measuring or metering the amount of gas that is put out on the high pressure side, and when we come to ask questions to find out how much loss is due to compressing certain aqueous vapors within the gas, or whether by leakage or other forms, only very few of us know just how much loss we are getting by leakage or compression on the high pressure part of our system. We say we have made so much gas, and we account for so much gas through the consumers' meters, and on our system as a whole we have lost so much gas per mile of 3-inch, or a certain percentage; but when it comes to just how much was lost on the high pressure and how much was lost on the low pressure, I don't believe there are more than 2 or 3 men in the room who have a combination system who can say to-day just what it is; possibly not any. In other words, our real information on that subject is just a little bit vague. Inasmuch as high pressure has come to stay, and sparsely settled sections are now being taken care of in that way with comparatively small size distributing lines, that 10 or 15 years ago we never dreamed of ever reaching, it is time we had some actual facts some actual data, upon just what the losses are owing to various high pressure conditions. We will assume that in most cases you could safely take a gas of 50 per cent. coal gas and 50 per cent. water gas—there will be some sections and some localities where it will be all coal gas and all water gas in others—but for means of comparison and for getting data, a 50 per cent. ratio, coal-gas-water-gas, would be fair to consider, and on that basis I think it is high time that we were getting some real figures as to what is a fair, allowable loss owing to pressure conditions. If there is anybody in the room who has some real facts that he can give I am most anxious to hear him.

Mr. Goeltz—We measure, of course, all that goes into our high pressure lines, for we have no other lines.

Mr. Witherby—That is a different proposition.

Mr. Goeltz—There is no use guessing at what is going to happen during the next year, but within a year we should have some real information, I think. We have a plant out there that it seems to me it would be worth the time of any of you to visit, and I want at this time to extend an invitation to any or all of you to come and look over and see what we have.

Mr. Witherby—Your plant, as I understand it, will be wholly a water gas proposition.

Mr. Goeltz—Water gas.

Mr. Witherby—Naturally there will be a little more possible condensation, and you can expect a little greater loss from that, than you would from a combination mixed gas or than from a straight coal gas. But I wish some of the people who have these combined high pressure and low pressure systems would get some real facts, some real data, on what we may expect in the operation of high pressure systems. In the old or low pressure system we say that if we keep our leakage, or losses, within 100,000 feet per mile per annum on a 3-inch basis, it does not pay to go very much further in the way of looking for leaks; in other words, our losses being not serious and just about balancing, it would hardly pay to expend a lot of money in hunting for the various little leakages that may exist. But we have no data whatever on our high pressure work. Some plants are operating on 5 or even 3 pounds, other plants I know are operating on 10, 15 or 20, even as high as 40 pounds, but there is so little real information that anyone of us seems to have that I will have to admit I am surprised, and it is time that we were getting some real facts before us.

The President—We will hear from Mr. Goeltz's nearest neighbor (Mr. Morrison, of Brockton) who has started a similar plant in connection with a low pressure system.

Mr. Morrison—I don't think any of us realizes the magnitude of the work that has been done by the Old Colony, nor the difficulties it has had to overcome. Considering the time in which they have had to do the work I think they have done wonders. It fell to my lot to be interested more, perhaps, than anybody else in what they were doing, because I had a similar proposition to tackle in connection with low pressure distribution, and the lines were laid in pretty much the same way. As Mr. Goeltz has emphasized, the idea of laying high pressure line continuously, without any expansion joints, can only be accomplished by laying the line in compression throughout, and it was perhaps my good fortune to be compelled to lay my line in cold weather. Starting late in October, we laid about 11 miles of pipe; and, as I say, we were fortunate in having cold weather in which to bury it. In order to lay your line in compression, it is necessary to throw in slack everywhere. Especially where you go over the top of a hill, or across a bottom, you must overbend it in one case and you must underbend it in the other case, so that it will be in compression at that point. You have your choice between cast iron, or so-called steel pipe, or wrought pipe. I don't know of any cast iron high pressure lines that are running under high pressure; there are several that are running under medium pressure. The valves and fittings must be the very heaviest to stand the pull. We used a steel body valve, rather than the steel flange, an extra heavy malleable flange, and thus far we have not had any leaks at all on the flanges, we have had no flanges separate and have had no trouble at the flanges. I went a little further in the matter of coating. I coated my pipe twice, coating it on the ground and again after it was screwed up, before it was lowered into the ditch. At the outlet of the compressor I provided a condenser, and at the outlet of the condenser a separator, the idea being to eliminate the condensation at the works. By lowering the temperature and passing it through a frictional separator we will be able to get out 90 per cent. of all condensable matter at that point. I provided for electrolysis, as we parallel the trolley lines for about 5 miles on one side and about the same distance on the other. I have not made a survey of the line to know how much current is flowing. I was afraid of the rubber joint from what I could find out. Some high pressure companies have found it successful, some have not. One company in 10 years had not had the slightest trouble; another company in a similar period had had quite a little trouble with the rubber gasket. I got away from that by using companion flanges and insulating the flanges and the bolts by mica, and, as far as the joint goes, it seems to be perfect. Just how often those flanges must be put in is yet an open question. Mr. Goeltz spoke of the leakage of the saddles; I was interested in that. We used the other type of saddle, the double strap, and so far, except in one case where very evidently one man thought the other fellow had tightened up the saddle and had not, we have had no trouble at all. The saddle, you know, has a small lead ring gasket to make up the joint. I believe the paint should be carefully scraped off where the lead gasket is to go, otherwise the gas will eat out the asphaltum paint and you will have a leak in time. I have not yet measured the amount of condensation, for our line has been in use only a little while and the consumption is not enough really to determine anything about it. We are getting out at the outlet of the separator a little water and some drip oil. After the line is going and delivering its maximum quantity I don't think it will be difficult to find out how much condensation we do get.

Mr. Morrison—One other thing more I wanted to speak about, was about the governors. I don't know whether anyone present has had trouble with governors. There are two general types of governors, one having a leather diaphragm, the other a metallic one. Of course, the leather diaphragm will give out in 4 or 5 years and has to be renewed. The leather diaphragm governors are, it seems to me, mechanically all wrong. You have to remove the meter connections, also all the pipe back of the governor, in order to get the top of the governor off at all and get at the valve, except in one case where there is a side outlet; but in any case you have to unscrew a dozen screws and take the whole top off before you can get at anything to clean it out, and if a little dirt, a little particle of rust or anything like gets under the valve, it means your seal will blow. I have had considerable trouble in that way already, although I spent a week with air pressure on blowing everything out, went

over every service, over every dead end and blew out everything under 30 pounds pressure of air. Still we get a little trouble at the start by particles of dirt getting under the valve seat. I think a governor made in that way is all wrong. We ought to be able to get at the seat and clean it by simply taking off a cap or something of that sort. The governor with metallic diaphragm is made that way. It is very much better arranged in that respect, but I have not had enough experience with it yet to say whether it is a success. I hope it will do away with having to renew the leathers every 4 or 5 years.

Mr. Goeltz—I would like to offer a suggestion to Mr. Morrison on the insulator. Respecting an experience that one of the Massachusetts Companies had, the (North Adams Gas Light Company), they used Dresser insulators with the rubber skirt, and they were perfect insulators, but just at the beginning of the skirt, running down through the insulator, the current jumped across through the earth, through the bolt, and was carried on through the bolt where it jumped the pipe. In one stretch of about a mile in about 1½ years, it was necessary to take out some of that pipe so that you might look for that condition of jumping right around your insulator. It is a matter of conditions there. If conditions are right you will have trouble from it.

Mr. Morrison—I anticipated that, and think it will be very easy to fix later on if it is necessary. As I said, the survey has not been made, and I don't know how much current is on the line. If you put your joints in often enough you won't get any appreciable current on your line. It is a question of how close you must put them. I know of 2 lines that are laid of cast iron pipe, with insulation at every joint, and those lines are dead to electrolysis.

Mr. Witherby—This discussion is really changing now from possible leakage under high pressure to a question of electrolysis, and hence we are getting to a very broad subject and one that has been worrying a great many of us. I think Mr. Morrison should qualify that it will make a lot of difference, if you are going to use insulated joints, even if you use them on every length of pipe, upon the kind of soil that the pipe is going through. If it is a dry, virgin, sandy soil, insulating every pipe length will absolutely prevent electrolysis of any nature; that is, electrolysis that will be harmful. On the other hand, if it is a damp, filled-in ground, with more or less acid and foreign matter, he is just multiplying his troubles every time he puts in a joint. There is no question about it. Mr. Shattuck found, in the Philadelphia Suburban distribution, they were put to hundreds-of-thousands of dollars' worth of expense to renew lines, and I know that many of Col. Richardson's gray hairs came from that line at North Adams. I believe to-day the best solution is to make an absolutely continuous line, metal-to-metal, and then, by careful survey in the danger zone, the danger district, work in conjunction with your trolley company to carry out proper return circuits. You cannot go against the natural laws; your lines will necessarily collect current at all points. Where you collect it it is not going to do you a particle of harm; but where it goes off your pipe is where the trouble comes, and there is the point you have to protect by proper bonds back to the company's return circuit. If that is done, outside of the possible chance of dumping a man in the ditch or getting a little fire, perhaps, where there is a broken pipe or where you are making a connection, which can easily and properly be avoided, there won't be a particle of damage to your lines from electrolysis. But on the idea of attempting to break up your system and destroy the electrical effect and the loss through electrolysis, if it is in damp soil, I would rather attempt to fly from here to the moon. It cannot be done. You might just as well meet the condition as you find it, make your line continuous, and at the danger points take it away by proper electrical construction.

Col. Richardson—Mr. Witherby absolutely told the truth. Inside of 14 months we had to take out 600 feet of 4-inch wrought iron pipe where it passed the power house of the trolley system in Adams, Mass. The trolley system used the direct current, and it was badly bonded. That section of the pipe passing the trolley power house was in mucky soil; it was very damp, and there all of the waste current left our pipe returning to their station. The only safety we had was to bond our pipe and make it a part of the carrying system of the trolley; and we did it thoroughly. We made connections of sufficient capacity to take a great deal more of the current than came back, and sometimes that was over 26 per cent. of the total output of the power station of the trolley system. We made every connection in our gas works and in the electric station when they were together in the same place, every water pipe, every steam pipe, and all the metal connections in our station, from Williamstown going 5 miles west, through to Adams 5 miles south. Until then we had trouble all the time. The only disappointment to us was the fact that we could not get any remuneration from the trolley system for saving their current. We earned it, because we did the work and furnished the apparatus, but we did not even get a thank you from them, whereas it did add to the efficiency of their operation, and it was the only method known (and I believe it is yet) to be entirely and safely protected from that devilish thing, electrolysis. There is no other way out of the danger from the gas company's side. If the pipe goes through a sand bank you are safe. If through damp, muddy soil, it is there all the time, and it works while you sleep. You cannot go to law, because they say electricity is not like gas. A poor company man can blow up a house and it is held responsible, but there is a legal combination against damages from electricity that is perfectly delightful from the other side of the case.

Mr. Norcross—I agree with Mr. Witherby in his statement regarding the impossibility of protecting a continuous conductor, such as he assumes the high pressure line to be, from electrolysis, by the insertion of insulating joints, and in that case the bonding system may be a good way out of the trouble. In cases of electrolysis on the low pressure piping, most of us using cement joints have a system which is not a continuous conductor, consequently we are not troubled particularly with the currents following the mains, and the bonding system cannot be used to protect from electrolysis. In such cases the trouble is almost always on the services. Insulating joints in the services will sometimes take care of that, but the wholesale recommending of a bonding system is, I think, a very dangerous recommendation. In the normal New England situation the gas company has a system of mains which is not a continuous conductor. The water company, on the contrary, uses lead joints, making a continuous conductor, and the two networks of piping almost always run side by side and mixed up together. Where a bonding system is permitted and adopted, it simply means that the trolley company is afforded an easier return for its current. It is loaned the use of another utility company's property for the easier return of its own current and a saving of coal at its power station; and by making the return easier, by bonding dipes to the negative busbars of the power station, the quantity of current which passes on those pipe lines is enormously increased. The connections being properly made and extensively enough carried out will protect the water company, but our troubles are thereby greatly exaggerated, because our dangers are increased just by so much as the proportion of current returned in the ground is increased. We have been studying over that question in New Haven (the Water Company and the Gas Company working together), and we have taken the stand that we would like any system adopted which does not embrace the use of our pipes as a part of the trolley system. We deem it entirely unfair and unreasonable to ask the loan of our property for a use which saves operating cost to the trolley company, but thereby increases stray currents in the earth and augments the patent cause of trouble by electrolysis. The statement was made that there was no other way to get around this trouble. There is another way; but it is at the expense of the trolley company; and I cannot see why the trolley company should not pay just as much for the return of its current to the station as for sending it out from the station. It puts up the copper to take its current away, but in most cases allows it to get back as best it can. I believe that nobody has the right so to use his property as to injure the property of his neighbors. I believe that that is a principle of common law. Now, there is a reasonable and perfectly practicable method for doing away with electrolysis in most cases. Sometimes it requires a combination of various things—insulating districts, radial-return feeders, etc.—but in the majority of cases the system called the radial-return feeder is a perfectly practicable method for getting over the trouble. The only reason it is not adopted universally, or nearly so, is simply that the trolley company has to pay for its own construction; the gas and water companies, as a rule, do not feel like doing that. Probably many of the members know this system, but for the benefit of any who don't, I will just state the idea is: A return is connected with the trolley track, carried back to the power station as a return feeder and connected with the negative busbar. The negative busbar, instead of receiving its current by the rails and through the ground, or through the bonds from the piping system, is entirely insulated from the ground, so that all current which comes back to the power station must come back by these insulated returns. A number of such return stations are selected here and there, and an electrical engineer knows how to lay it out. That method will eventually do away with electrolysis. It has been installed in Toronto

after a long lawsuit, the result of which was the payment by the trolley companies of a large sum for damages to the piping systems. It has been installed in Winnipeg and is working perfectly successful. It has been installed in Richmond, Va., and it is perfectly successful. It has been installed in Providence, R. I, and is a perfect success. I have investigated the situation there myself and find that the water and gas people are perfectly contented with their relations with the trolley company and the situation as regards electrolysis, whereas years ago their property was being chewed up right and left by the stray electrical current. I may say that, in the case of the Peoria (Ills.) Water Company *vs.* the trolley roads of Peoria, which has been in the courts some 5 years, the Water Company has finally obtained an injunction against the trolley company from so returning their currents as to damage the property of the Water Company. The legal costs of the suit were divided. The reason for that was the Water Company brought suit to compel the trolley company to adopt a double trolley system, their idea being that that was the only way in which this trouble of electrolysis could be thoroughly taken care of. That is the best way, but it is not the only way; and the judge simply issued an injunction and gave the trolley company a reasonable time to put in some system which would take care of their currents without damage to the property of the other company. The system which they are probably to put in is the radial-return feeder system, which I described.

Col. Richardson—Out of justice to myself, perhaps, I should say that I have spoken from the viewpoint of the gas company alone. Of course, that is the ideal system and is what we had asked for constantly for two years there in Berkshire county from the trolley company. It is just what we wanted to have done. It was only doing as they would like to have done by them; but they are not amenable to a request, and evidently not to law. The radial-return as a simple proposition would effectively eradicate all danger of electrolysis. My statement was made from the viewpoint of the gas company alone, and was the only remedy so long as the trolley company would not install that simple, effective process. Mr. Norcross's statement is simple and direct, it is true, and if the trolley companies would respond the gas company's trouble would be at an end.

Mr. Witherby—It is worth while to say just one thing more. Mr. Norcross thinks from his opinion of the situation that they have practically all cement joints. Where there is one gas company that has all cement joints there are 10 that have all lead joints. I think that is perhaps good practice to-day as it stands. The company that has lead joints is in parallel condition with the water company, that have a semi-continuous return, and when we find things in that way we have to meet the situation as will be the easiest and simplest road to take care of it. I will concede that Mr. Norcross can get an ideal situation, but we find not ½ of 1 per cent. of such situations. Wherein my first remarks were wholly on a continuous pipe, wrought iron or steel high pressure system, it is practically the same when applied to a low pressure system with metal joints, whether it is poured lead or lead wool. We also find, just as Col. Richardson found, that to the one trolley company that will work and co-operate with the gas and water companies in an honest effort to get matters straightened out satisfactorily to all, 99 other trolley companies say it is a matter of indifference to them how the current gets back to the power house. Now, don't let us look at this thing from a theoretical standpoint of what might be or what would be just the ideal thing; but take it as we find it. Most of these semi-suburban and small trolley companies are working against the hardest sort of financial situation, and on the question of all sorts of return feeders. While they are very nice to have, the management of the financial end back of the company says "No;" and as long as the motor turns and the car moves that is all they care about. An electrical road manager said to me—he is a very profane man—"What the hell do I care how the current gets back so long as it gets there? What you want me to do would cost us $100,000 in copper." I told him that was undoubtedly so; but I thought it would cost more than that if he would put it in as it ought to be; and he said, "Not on your life; not a pound," and he did not. Theory is one thing, but practice is what we meet, and that is what must govern our actions. I reiterate what I stated before, with a continuous pipe, high pressure, line find your danger zone, then bond it back to the trolley company and stand by it.

Mr. Norcross—I agree with Mr. Witherby perfectly that where the trouble is simply in a continuous return, a continuous conductor, the trouble can be taken care of with bonding, but I don't think the fact he mentions, that the trolley company refuses to spend a cent, means that it should not spend a cent and that we should meekly take an injury, do all the work and pay for it. The reason this thing is not understood by everyone of us from the legal standpoint is that the trolley companies have done everything to prevent a legal decision. They don't want that thing decided. In some cases they spend $100,000 rather than have it get in the courts; in other cases they compromise for a more moderate sum. They do not want a decision. I think the first really clear decision is that which came out within this last year at Peoria, in which the water company obtained an injunction from the United States courts against the trolley company returning its current in such a way that it would injure their property. I think that is clarifying the atmosphere very much from the legal standpoint. One feature of this question Mr. Witherby has not mentioned, if he had it in mind, and it may be peculiar to our situation that this consideration should arise; but that is the safety of the gas works. We discovered that pipes in the gas works connecting our oil and tar tanks were being eaten up with electrolysis. We put in insulating joints. We discovered sparks here-and-there, where they were very unwelcome, at certain times, and we put in insulating joints. We had surveys made and put in insulating joints everywhere we could think of, and in the course of the surveys we discovered that not only at our pipes but at our gasholders and our oil tanks—we have tanks holding 1¼ millions gallons of oil—there was current flowing into those tanks from ground and off those tanks into the ground. Our steel holder tanks were taking current from the ground and returning it to the ground. We did not know where it was going off. One cannot crawl round under the bottom of a 160 or 170 foot steel tank to find out where the electricity is leaving. Maybe it is destroying the bottom, and maybe it is not; it may be leaving at any point. While the bonding system may take care of the eating up of a continuous conductor like a high pressure line, it will not take care of a condition such as I speak of, where the gas works is being threatened by the same trouble, and it not only will not take care of it but it will aggravate it, because every bond that you put on to a piping system makes a path of less resistance for the trolley currents to pass through the ground, as compared with the tracks and such overhead return feeders as may exist, and will just by that much increase your danger to other metal structures having contact with the ground.

Mr. White—If we may diverge from the subject of electrolysis, I would like to ask a question. Is there anyone here who has had any leaks caused in his lines by expansion? We speak of expansion joints. It seems to me all the leaks that I know of are caused by contraction. Has anybody had any trouble in either a high pressure line or any other line from expansion? If we crowd things together in the ground, when warm weather comes are we likely to have any trouble from expansion?

The President—What do you say, Mr. Goeltz?

Mr. Goeltz—I have never known of any such condition. I have built a number of miles of high pressure lines, but have never known of a break being caused by lateral expansion of a gas main in the ground.

The President—It is moved and seconded that the thanks of the Association be tendered to Mr. Goeltz for his very interesting paper. [Adopted.] We have now a volunteer paper. It came into New England a little while ago on a mission, and its author was unable to be present. He is with us to-day and has kindly consented to read the paper. Mr. Norcross.

Mr. J. A. Norcross—Gentlemen, this paper is not in advocacy of any kind of a gas arc light, nor is it in advocacy of any make or any design of post. It is only a simple description written with the idea of encouraging others to believe that a gas white way is perfectly practicable, and to encourage them to go in for it and not rest under the idea that electricity is the only thing suitable for ornamental street lighting and allow the electrical man to get all of the business in that line.

Mr. Norcross then read the following paper. entitled

THE GAS WHITE WAY IN NEW HAVEN.

The feasibility of a "Gas White Way" in New Haven was for a long time under consideration by the writer. Owing to the known difficulties of keeping gas lights in perfect operation out of doors in our severe climate, the uncertainty of pilots and electric gas lighting devices under these trying conditions, much precious time was lost which might, as it now appears, have been more profitably spent in trials of installations and acquiring of business of this character. It was finally decided that a start should be made and two ornamental

(*Continued on page* 258.)

THE AMERICAN GAS LIGHT JOURNAL

Entered at the Post Office, New York City, as Second-Class Matter.

Published weekly at 42 Pine Street, New York City.

Telephone Call, John, 2996. Cable, Am-Gas.

A. M. CALLENDER & CO., - - Proprietors.

THOMAS J. CUNNINGHAM, ELBERT P. CALLENDER, } Editors.
H. THURSTON OWENS, - Associate.

CHARLES H. WADELTON, Manager.

Agents—American News Co., 11 Park Place, New York City.
Lemcke & Buechner, Berlin, Germany.
Aug. Siegle, 30 Lime Street, London, England.

TERMS OF SUBSCRIPTION.

United States, Cuba and Mexico, $3 per year. Canada, $4 per year. All other countries, $5 per year.
Single Copies, 10 Cents.

NOTICE TO ADVERTISERS.

New Advertisements and changes of copy therefor should be in hand Wednesday noon of week prior to date of issue.

NEW YORK, MONDAY, APRIL 15, 1912.

[Official Notice.]

Fourth Meeting, Southern Gas Association.

Office of the Secretary, Southern Gas Association, Atlanta, Ga., Feb. 19, 1912.

Gentlemen: The Fourth Annual Meeting of the Southern Gas Association will be held in Jacksonville, Fla., April 17, 18 and 19, 1912. The following papers are promised:

"Further Notes on Public Policy," by Mr. R. C. Congdon, Atlanta, Ga.

"Better Domestic Appliances," by Mr. C. A. Case, Cleveland, O.

"Scientific Salesmanship as Applied to the Gas Industry," by Mr. Albert B. Kelley, Philadelphia, Pa.

"Gas Lighting in the South," by Mr. H. P. Dains, Philadelphia, Pa.

"A Practical Demonstration," by Mrs. S. R. Dull, Atlanta, Ga.

"Practical Experiences in the Gas Business," by Mr. Roscoe Nettles, Tampa, Fla.

"The Influence of Various Departments on Commercial Work," by Mr. Chas. D. Armstrong, New Orleans, La.

"System in Office Management," by Mr. L. N. Young, Athens, Ga.

"A Study in Retort House Practice," by Mr. S. H. DeFreese, Chattanooga, Tenn.

Hotel and railroad rates will be announced later.

E. D. Brewer, Secretary.

[Notice.]

Celebration of the Centenary of the Introduction of Gas as an Illuminant, Under the Auspices of the Am. Philos. Soc.; the Franklin Institute; the American Chemical Soc.; the American Gas Institute.

There is no change in our information respecting the celebration, to hand from Mr. William J. Serrill, Acting Secretary. All communications concerning the same should be addressed to him at 1401 Arch street, Philadelphia. The lectures will be delivered in the Hall of the Franklin Institute, Thursday and Friday, the 18th and 19th insts., as per the following

Programme.

THURSDAY, APRIL 18th, 1912.

8:00 P.M.

By-Products in Gas Manufacture.

By Charles E. Munroe, Ph.D., Washington, D.C.,
Professor of Chemistry and Dean of the School of Graduate Studies, The George Washington University.

FRIDAY, APRIL 19th, 1912.

10:00 A.M.

The Commercial and Financial Aspects of the Gas Industry.

By Hon. George B. Cortelyou, New York,
President of the Consolidated Gas Company.

11:00 A.M.

The Technique of Gas Manufacture.

By Alfred E. Forstall, M.E., New York,
Secretary, Trustees Gas Educational Fund of the American Gas Institute and Past Secretary, American Gas Light Association.

2:00 P.M.

Gas as an Illuminant.

By Van Rensselaer Lansingh, B.S., New York,
President of the Illuminating Engineering Society.

3:00 P.M.

The Use of Gas for Heat and Power: The Testing of Gas.

By Edward B. Rosa, Ph.D., Washington, D. C.,
Chief Physicist, National Bureau of Standards.

These lectures will constitute an interesting and valuable review of the development of the use of gas as an illuminant, and as a source of heat and power. Persons interested in the manufacture and use of gas from all parts of the country, members of the Societies named, and the general public, including ladies, are cordially invited to attend the sessions. An effort will be made to bring together as many as possible of the pioneers in the gas industry, particularly those who have been engaged in the industry for 30 years or more. All such are requested to send their names to the Acting Secretary. A temporary loan exhibition will be held in the Hall of the Franklin Institute, of articles, models, appliances, books of pictures, that have an historical interest.

THE DEAN IS DEAD.

Death of Mr. J. B. Howard.—The dean of the fraternity, lovable, winsome Uncle "Jerry" Howard, died at his home in Galena, Ills., at an early hour of Wednesday, the 10th inst., and the funeral services were held in Dubuque, Ia., at the home of his son-in-law, the afternoon of Friday last. For this information we are indebted to the courtesy of Mr. George McLean, of Dubuque, who, in his dispatches, intimates that the death was probably the result of shock following an accident the previous evening.

[Special Editorial Correspondence.]

FOURTH ANNUAL MEETING, PENNSYLVANIA GAS ASSOCIATION.

Park Hotel, Williamsport, Pa., April 10, 1912.

The Fourth Annual Convention of the Pennsylvania Gas Association was called to order at 10 A.M., by the President, Mr. William R. Rhoades, who also has much to say in connection with the operations of the Williamsport Gas Company. The assembly place was in the "Clio room" of the Park Hotel, and room and hostelry were all that one even fastidiously inclined could wish. To cap the creature comfort climax, finer weather could really not be enjoyed, and life certainly could be well enjoyed in this orderly, beautiful city. Secretary W. O. Lamson, Jr., was President Rhoades' efficient aide, and he presided at his desk after the fashion of one to whom secretarial duties were of the natural order. At least four score members were in their seats when Mayor Samuel Stabler greeted the Association in hearty fashion. Although he bestowed no key before which all locks would fail, and did not promise anyone immunity for trouble that might be occasioned one way or another, he nevertheless managed to convey the impression to his auditors that Williamsport without gas would be quite unlike its present satisfactory self were it without the product so well distributed by the Williamsport Gas Company. The Mayor's clever welcome was suitably responded to by ex-President Keppelman, of Reading, who remarked, among other phrases, that if the officials of fair Williamsport gave the local gas men no cause for unfair interference with their trafficing, that the Company would see to it that the local gas supply would be kept up to an even more shining mark by Williamsport's gas men. Then Secretary and Treasurer Lamson presented his annual reports, which documents showed that the roll of membership was lengthening satisfactorily, and that the Association's bank balance was accumulating in pleasing way. Next in order was the address of President Rhoades. The salutatory was rather on the informal side being

mainly devoted to a sensible, well-balanced statement respecting the value of Association work. Having concluded his inaugural message the President introduced Mr. George G. Ramsdell, Secretary of the American Gas Institute, who lucidly and connectedly outlined the mutual advantage springing from formal affiliation of section Associations with the main body. That the logic of Mr. Ramsdell's reasoning was convincing was evident from the unanimity of expression from many speakers who joined in the discussion of the Ramsdell presentation. The subject was eventually referred to the consideration of the Council, that body being instructed to bring in a formal recommendation prior to the adjourning of the convention. The first paper for consideration was that by Mr. Wm. Hoffman, of Reading, whose rather pithy presentation of the subject of "Credits," led to a lengthy discussion. This would likely have been even more spirited were the author present in person. In his absence the reading was done by Mr. J. H. Keppleman; and as usual, "Keppie." was in every good sense equal to the task. This brought the morning session to a close. While no provision had been made for a set exhibition or display of appliances and the like, it is nevertheless a fact that attractive displays of such are being made by the H. Mueller Mfg. Co., the Welsbach Company, the General Gas Light Company and the Sun Street Light Company.

The afternoon session was convened promptly at 2 P.M.—in fact, promptness was a feature of the proceedings all through—when Mr. J. E. Philbrick, of York, read a paper descriptive of "Special Selling Campaigns." This subject was so well handled that the author was rewarded by a discussion that took up fully two hours, and that engaged at least two-thirds of those in attendance. Practically the entire field of gas salesmanship was covered, and it was closed by the adoption of a resolution to appoint a committee to promote a campaign of education amongst the architects of Pennsylvania, so that the latter might have their senses sharpened to that which was going on in the gas field along modern illuminative methods. Immediately before the adjournment announcement was made a telegram came to hand from "Cyclone Bill" Merritt, whose former official relationship to the Society had been of such great benefit to it. Away in far Fremont, Neb., the "Cyclone" is expending some of his energy. His message was replied to in a way that must convince him that he is neither out of sight nor of mind of his former close colleagues. There is no set entertainment for to-night, but rumor hath it that "The Old Gray Bonnet" will be in evidence to-morrow.—H2O.

WILLIAMSPORT, Thursday, P.M.

That the interest in the proceedings was well maintained seemed shown in the hundred-odd that greeted the call to order this morning. Divested of all undue verbiage the work was thus accomplished: Following the report of the Nominating Committee, these gentlemen were elected officers for the ensuing year:

President.—H. H. Ganser, Norristown.
First Vice-President.—L. R. Dutton, Wyncote.
Second Vice President.—W. C. Anderson, Plymouth.
Secretary-Treasurer.—W. O. Lamson, West Chester.
Council.—J. M. Murdock, J. E. Philbrick and G. W. Beck.

The Committee on Place of Meeting reported in favor of York as the place, and the 2d of April the time, which recommendations were adopted, and which action rather goes to show that Brother Philbrick (whose exileing from the East is but of short record) seems to have made his mark on the scroll of the gas men of the Keystone State. The Committee on Publicity was thus named: L. R. Dutton (Chairman), H. H. Ganser, I.W. Peffly, R. T. Pierce and H. T. Owens. Right here the sad announcement was made from the desk that "Uncle Jerry" Howard, of Galena, had suddenly passed away the preceding day. It was ordered that a message of sympathy be sent to the Illinois Gas Association, of which body he was the only Honorary Member, and with whom the JOURNAL'S correspondent had much to say at the meeting in Chicago of that body last month. The remaining set paper on the list was that by Mr. Elwood Egolf, on the topic of "Domestic Science." It was well prepared, well received and well discussed. In the afternoon a baseball match between the gas men and the appliance men, was brought off at Athletic Park. Of course, the gas men had the better of it, as 9 is to 4. Philbrick, as pitcher, proved himself in the Mathewson class; Millspaugh could not catch a tortoise; Keppleman was actually mistreated; and poor Williams was knocked out of the box. The evidences of the strenuousity of the game were everywhere apparent, albeit none seemed altogether unable to "lift the Flock" sufficiently high.—H2O.

WILLIAMSPORT, PA.. Thursday Midnight.

As it was a beforehand certainty, so also has it been a sweet reality. The banquet was served in the well-appointed dining room of the *hoi polloi* organization, the Williamsport Country Club, promptly at 7 P.M. The aroma of *potage des nuit* sifted through the atmosphere as the Chairman's announcement that the "banquet was on" was wafted to the ears of 75 of Pennsylvania's best. The *menu* was enticing, the service was excellent, the viands were appealing, the direction of it all was perfect; wherefore this enjoyable occasion will long be remembered by those who shared it. The speeches were well worth listening to, especially those by Mr. John J. Gribbel, of Philadelphia, whose theme was set to the main thought of ideals in business. A sparkling enunciation of sentences on the order named, by Mr. Wm. Mansel, Editor of the Williamsport *Grit;* and a symposium by Mr. L. R. Dutton, that bore new testimony to the avails of his powers oratorical. It was in every sense a function to be enjoyed. I had almost forgotten to note that admirable music was furnished by the University male quartet. The weather continues fine, and it will be necessary to hold a meeting to-morrow morning, in order to clear off the agenda. As to-morrow will be too late for the order set by your press room, I will have to "conclude this in our next." It gives me unbounded satisfaction, at this time, to write that if the Pennsylvania fourth meeting is at any time to be exceeded from any point of view, respecting value and amity, then the "exceeder" will surely be a gem of gems.—H2O.

BRIEFLY TOLD.

THE SAN ANTONIO MEETING OF THE SOUTHWESTERN ASSOCIATION.—Secretary Fisher's very complete circular respecting the meeting of the Southwestern Electrical and Gas Association, to be held in San Antonio, Tex., the 25, 26 and 27 inst., leaves nothing untold respecting that which is in store for the members and their friends. Headquarters, sessions' room and exhibition hall will all be in the St. Anthony Hotel, which up-to-date hostelry is right in the business heart of busy San Antonio. The fact that the Association is rather of the electrical than the gas order—as, of course, vividly shown in the Association's titling—is all the more accentuated this year from the fact that an extensive exhibition of electrical devices has been planned for, and is to be shown in the beautiful ball room of the St. Anthony. However, as the two industries are very closely inter-related in Texas (possibly more so there than in any other State of the Union), the titling may in a sense be overlooked, especially as precedence does not count for that which it did in the nearby past. The paper list, which carries 8 separate numbers, has only one gas subject paper, which is from the pen (or pencil) of Mr. George M. Griffith, of the Galveston Gas Company, the theme being "Prepaid Meters: Their Advantages and Disadvantages." It is worthy of note, though, that there is a second number which closely concerns those interested in both industries. The topic is, "Theft of Electric Current and Gas," and the commenter is Mr. Harold L. Geisse, a clever lieutenant on Mr. Tuttle's staff, at San Antonio. It seems odd to consider theft and the electric current in direct connection; but speed and interception are by no means antithetical. The entertainment programme is lengthy and varied and promising. Theater parties, a reception at the Country Club, the caperings of the Sons of Jove, and a tour of San Antonio in electric vehicles, to terminate with an *al fresco* Mexican supper on one of the plazas. Glorious old San Antonio, no longer; now it is modern San Antonio, throbbing with energy, glowing with up-to-date spirit. The Alamo is as the dust of the pyramids. President Carroll will be on hand to direct the "Proceedings," which direction will be well simplified through the active assistance of Secretary Fisher, to whom we are indebted for many courtesies in advance of the meeting.

A JOINT MEETING.—We are indebted to the attention of Mr. A. J. Marshall, Secretary of the New York Section of the Illuminating Engineering Society, for the information that, at 8 P.M., Thursday, May 2d, there will be held in the building of the United Engineering Societies, a joint meeting of the American Institute of Architects, and of the local Section, Illuminating Engineering Society. The paper for consideration by the Chapter and Section is entitled "The Relation of Light to Shadow and Color in Design," and the preparers are Messrs. Henry Hornbostel, of the Chapter, and Mr. Henry Jones, Jr., of the Section. The paper will be illustrated by means of models and color booths, and it, in connection with related subjects, will be discussed by eminent members of the Institute and the Society. Advance copies of the paper are obtainable on application to Secretary Marshall, at his headquarters, 16 East 40th street, New York city. As the two prior attempts at holding an informal *a la carte* dinner, in Keene's Chop House, 70 West 36th street, at 6 to 6:30 proved such a large success, similar arrangements in respect thereto, as to time and place, have been perfected. Many ladies will attend this dinner function, and, as the Secretary remarks, to help the members in developing sociability, he urges that as many as possibly can will attend the sessions.

CURRENT MENTION—

HERE is another surprise. At any rate it was quite a surprise to us to learn that Mr. E. D. Brewer, whose service with the Atlanta (Ga.) Gas Light Company dates back to 1898, in which time he has advanced himself from the position of helper to that of Statistician for the Company, had resigned. Besides being Statistician to the Company, Mr. Brewer is Secretary and Treasurer of the Southern Gas Association, and to his able aid much of the work that eventuated in the National Commercial Gas Association selecting Atlanta as its meeting place this year may be traced. He resigned in order to accept the place of representative of the General Gas Light Company in the Southern States, Cuba and Mexico. His headquarters will be in Atlanta; and that he is certain to make a go of it in his new field may not be questioned. Having heard of his proposed action, his office associates thought, now that he would be frequently "on his way" to many strange places, he should have something that he could continually consult as to the flight of time; wherefore they presented him with a handsome gold incased watch. May the best of good luck go with him wherever he goes.

WRITE to the H. Mueller Manufacturing Company, Decatur, Ills., for a copy of the latest gem from its publishing department. It is entitled the "New Servant,' which servant is none other than the Mueller "Colonial Self-Closing Faucet."

(*Continued from p. 255.*)

posts were erected in front of the Gas Company's office, each equipped with two 5-burner inverted gas arcs, both lighted by pilots, one controlled at the lamp itself, the other by a pilot fed from the base of the post, with means at that more convenient point to turn the gas supply on and off. The handsome appearance and beautiful lighting effect produced, and the freedom from any difficulties in operation, soon gave us courage to extend the experiment and the installation later described was the result. The intention was to light up at our own cost two blocks of the shopping street in front of our office, and using that as a sample, to obtain orders for treating other blocks in like manner at a figure, which for installation would just cover the cost, and for operation would net a satisfactory price for gas and maintenance, but would at the same time look reasonable to the merchants.

That others may be spared the disappointment experienced by us, it should here be related that our electric friends about this time applied themselves vigorously on a very different plan. They got the central merchants together at a large luncheon and, with the backing of the Publicity Club, and the help of a professional and successful White Way promoter, took orders for a White Way which was opened with a great civic celebration on December 15th last, and may properly be called a "Great White Way." It is really magnificent.

We in New Haven are proud of our electric light white way. I have personal regrets, however, that it is not gas. The electric orders were on an ornamental post for 5 Mazda lights, a mere individual sample of which had previously been installed. Later, possibly because it was apparent that the gas lamps already installed would make their selection look pale by comparison, our competitors called together the merchants and got their agreement to a change to the "inverted luminous series arc," one sample only of which they were able to exhibit, which arc had never to that time, it was said, been put into commercial use for street lighting. The more than "up-to-date" nature of this last feature was used as a telling argument and completely won the merchants present to its adoption. We find ourselves then with a perfectly successful "Gas White Way," ornamental by daylight, very brilliant, yet free from glare at night, which last cannot be said of the electric installation, a surpassingly even and agreeable illumination, no material difficulties in operation even in zero weather, and, "No Revenue."

The last word has, however, yet to be said on this last point. After due comparison of the gas and electric installations, merchants from three different shopping districts have waited upon us and urged us to canvass their streets for similar installations, and it is hoped that our labors will finally meet with pecuniary reward. I might mention that these installations were both in expensively paved streets, and the expense of installation is very high for that reason. The electric price for installation was $3 per front foot of property, our price is $1.35. The electric price for current and maintenance is $1.60 per front foot of property per year, which nets probably between 6 cents and 7 cents per kw. for current. Our price for gas and maintenance is 70 cents per front foot of property, per year, netting we believe 80 cents per 1,000 for the gas burned on a "dark to midnight" schedule. There is, therefore, a strong financial argument in favor of gas, and as regards the preference of the individual it is believed that gas is on an equal footing in most cases and some say it is their choice. There are difficulties of no small proportions to be overcome in canvassing for a "White Way." It was found that some would pay for gas and maintenance, but would not pay for post and installation. In such cases the property owner sometimes will agree to pay for the installation, the tenant agreeing to the maintenance charges. In other cases, some one or two merchants will block the plan by refusing to bear any charges whatever. It is then necessary to get the other merchants to help by applying the pressure of public opinion. Having obtained the orders for posts it is necessary to obtain permission from the city to erect and maintain them, likewise from the individual property owners, and, even when no expense is involved, an occasional owner will halt the project for some real or imaginary reason. It has been demonstrated, however, that perseverance and tact will eventually overcome these difficulties in most instances.

The present "Gas White Way" consists of 12 posts, Fifth avenue pattern, J. L. Mott Iron Works, No. 1 post, with No. 6 cross-arm top, each post being provided with 2 Humphrey, 5-mantle, inverted outdoor arcs. The design and dimensions of posts used are shown to scale in blue print herewith. You are all probably familiar with the lamp used. It may, however, be mentioned that the color selected was black and gold, and that the maximum candle power, at 60° from the horizontal, is 824 each lamp, on 15.2 feet of gas, tested by the Electrical Testing Laboratories, making 1,648 candles for each post for a consumption of 30.4 feet an hour.

The post is connected to a 1¼-inch service, which ends at a by-pass, reducer, and ¾-inch brass service cock, opposite a small door in the base of the post. The supply pipe above the cock is ¾-inch, and the pilot pipe, taken off below the cock mentioned, is ⅜-inch and runs separately from base of post and inside same to both lamps. The ¾-inch gas pilot pipe was simply a question of necessity. We wanted a large supply pipe, ⅜-inch, and we could not get them in a gas supply pipe larger than ¾ which would go up through the post. During the recent zero weather some trouble was experienced from the frost in the pipe, but as this was found to occur always at the supply cock in the bottom of the post, it could, therefore, easily be cured in a few minutes, without need of disconnecting, by the application of a gasolene torch at and near the cock. No trouble whatever has been encountered with the pilots. No serious breakage has occurred since the first week the lamps were in use, when a heavy wind and hail storm broke 6 out of 24 globes. The globes were at once covered with invisible wire netting to avoid possible suits for damage by falling or fallen glass. There has since been no breakage. The lighting and extinguishing are taken care of from the office. A man with a a key to the door in the post has but to turn the main cock on or off. If on lighting, any lamp is found out of adjustment, it is attended to at once, as the loss of a single powerful lamp is conspicuous.

The costs of installation are set forth in accompanying sheets in detail for 10 posts, the others having been our first and clumsy initiation in "how to do it," and the expense naturally somewhat higher. These sheets also contain an estimate of cost of operation, and the prices it is proposed to charge customers for installation, gas and maintenance. Much cheaper posts can be used with good effect, and where a few lamps are desired by one customer it is feasible to attach them to his service and save costs for digging, pavement repairs, etc. It is also possible to have these outside posts attached to meter outlet of customer, to be operated by him entirely, or by him except for maintenance of the lamps by the gas company for a small charge. This last arrangement is cheapest for the merchant, if he has a watchman or anybody about his premises late enough to attend faithfully to extinguishing.

The form of contract on which we are canvassing for White Way signatures is attached hereto. The question of later ownership of the post is not clearly defined, but it would seem reasonably safe to waive this point, as it would at once arouse antagonism to insert a clause formally vesting ownership with the Company while at the same time requiring payment by the customer for the installation costs.

In conclusion let me say I believe that the market now offers posts so attractive, and gas lamps of either high or low power so suited to

outdoor use, as to leave no reason to the gas fraternity for not establishing gas "White Ways" in every city and town.

COST OF INSTALLATION—"WHITE WAY."

Installing ten ornamental street lamp posts, Fifth avenue pattern, J. L. Mott Iron Works' No. 1 post, with No. 6 cross-arm top, for Orange street White Way; 2 Humphrey, 5-mantle, inverted, outside arcs per post:

Material, Etc.	Cost.	
Ten lamps at $65		$650.00
Painting same with red lead		10.66
Twenty 5-burner Humphrey gas arcs complete at $12.50		241.00
Piping and hanging		57.98
Services run		161.17
Teaming		22.15
Repairing walks		14.95
Decorating posts in old bronze		90.00
		$1,247.91
City permits	$13.00	
City inspector	5.17	
Permanent pavement repairs (asphalt) 21 yards at $5.	105.00	
		123.17
Cost of installing 10 posts, complete		$1,371.08
Cost of installing per post, complete		$137.10
Price to be charged		$135.00

ESTIMATE OF GAS AND MAINTENANCE.

Gas to 12 o'clock midnight, 2,000 hours by 18 feet by 2 = 72,000 feet at 80 cents per 1,000	$57.60	per year.
Maintenance	6.25	"
Lighting and extinguishing	3.00	"
Total cost per post of gas and maintenance	$66.85	"
Price to be charged per post per year	70.00	

The price we are figuring on for gas being 80 cents. It may be of interest to read the form of contract. It was not drawn up by a lawyer, but was approved by one, except for the point of ownership of the posts, which I thought as a matter of policy we had better waive.

Contract for Ornamental Street Lighting.

Agreement entered into this.....day of.....19.. between The New Haven Gas Light Company, hereinafter called the Company, and ....., hereinafter called the consumer, both of New Haven, Connecticut.

The Company agrees, subject to the consent of the City and owners of the property, to install and operate ornamental iron posts on ..... Street, each equipped with two 5-burner Outdoor Inverted Humphrey Gas Arc Lamps, or their equivalent in lighting power; posts to be staggered and placed at intervals of approximately 50 feet as measured along the length of the street.

The Consumer agrees to pay, within 60 days from first lighting, One Dollar and Thirty-five cents ($1.35) per front foot, or a total of .....Dollars for post and lamps, erected and installed complete, ready for use.

The Consumer also agrees to pay monthly at the rate of seventy cents ($.70) per front foot per year for maintenance of lamps, and the supply of gas, lighting at dark and extinguishing at midnight, or a total of.....($....), as proportionate share based on a frontage of ..... feet. Paymont to be made to the Company with 10 days from date of bill rendered.

The Company is to have free access to posts and lamps at all reasonable times, and is to be held blameless for mishaps and interruptions caused by circumstances beyond its control.

This contract shall be for a term of two (2) years beginning..... .... 19. , and ending .... 19..

The Company shall have the privilege of shutting off the gas supply from the post or posts on property controlled in part or wholly by the person guilty of breach of this contract.

This contract shall not become effective until enough people have agreed to its terms to warrant The Company at its discretion to begin the work.

.....

THE NEW HAVEN GAS LIGHT COMPANY

.....by.....

Discussion.

The President—We have another paper connected with this, on "Industrial Appliances." In the absence of the writer, Mr. Morrison has kindly consented to read it; or, if you prefer we will discuss this paper before having the other, it is at the option of the meeting. Mr. Norcross invites discussion. I believe Mr. Africa has some experience along this line.

Mr. Africa—Mr. President: Last summer we installed five 5-light, white-and-gold, inverted gas arcs in front of our office, and the merchants on the street at once became interested in better lighting facilities. At that time it was against the ordinances of the city to place a post or pole at or on the curb line, nothing being allowed to project beyond 42 inches outside the buildings. A petition was prepared, signed by about 40 of the merchants on the street, and presented to Board of Mayor and Aldermen, asking permission to erect the posts. After many delays incident to such proceedings we were finally granted permission to erect and maintain 32 single-arm, ornamental lamp posts, each equipped with one 5-light mantle, outside, inverted, gas arc light. While waiting for the special permission to be granted the merchants were canvassed and enough contracts signed for a 3-year term to ensure the success of the project. As soon as permission had been secured we placed our order for the equipment and the Board of City Engineers were authorized to locate position of said posts for us. The first post was delivered on the ground, Monday, Dec. 18th, at 4 P.M., and on Wednesday, Dec. 20th, at 4:30 P.M., the 32 arcs were lighted for the first time. The posts are located 35 feet apart, painted white, each arc being equipped with an alabaster globe, hung 12 feet from the pavement to bottom of the globe. The arc lights are lighted every night at dusk and extinguished at 11 o'clock, and the merchants pay an aggregate sum of $1,800 per year on 3-year contract. We did not base the charge on a per foot, front basis, but the merchants agreed individually to pay a sum, determined by himself, and when we had secured enough contracts to ensure success we went ahead with operations. We have arranged to charge investment during the 3 years' contract, and the merchants have the privilege of renewing contract at the end of 3 years for a further period of 3 years. We have a photograph giving a good idea of the street at night, and we would be pleased at any time to give data to anyone that may care to have the same.

Vice-President Barnum—I should like to ask Mr. Africa what are the hours of lighting when you make contracts with merchants?

Mr. Africa—The lamps are lighted from dusk till 11 o'clock at night.

The President—Any discussion or questions to be asked along the lines of this paper?

Mr. Ware—I should like to ask Mr. Norcross whether he tried different heights for these lamps, and whether he found a greater height impracticable. I should judge from the sketch that it is possible to raise the top section a little higher.

The President—Any other questions?

Mr. Smith—I would like to know what effect this white way lighting has had on general window illumination. The reason I ask is I understand in some places, where electric people have installed white ways, the revenue has been decreased on general window lighting; so much so that it has not been a business proposition.

The President—If there are no further questions Mr. Norcross will answer those already asked.

Mr. Norcross—I did not make any experiments on the height of the lamps. I went about in New York, not on the great white way either, and looked critically at the street lights, and I made up my mind that the street lamps, the posts and the lights, on Madison avenue and Fifth avenue, in the fashionable part of the city, gave the most graceful and the handsomest effect that I could find, and that the lights were high enough so that they would not be oppressive to the eye. I, therefore, bought these posts—the same identical posts—and put them up, and find that is true. The electric white way in New Haven has posts bringing the lamps a little lower. Perhaps Mr. Burr can tell me the relative heights of the two.

Mr. Burr—About 14 feet for the electric and something over 16 feet for the gas.

Mr. Norcross—Well, that difference of 2 or 3 feet makes a marked difference in the sense of glare as you walk along the street, so that we feel that our lights are high enough, so that there is no glare. It is notably absent, and there would be no reason for putting them higher. On the other hand, we know that the single luminous arc which they have on top of the electric posts is a little too low. Probably New York tried it out pretty thoroughly before settling on that pattern. With reference to the effect on window lighting, I don't know what the practical effect would be where a company was just as anxious to keep electric lights in the windows as to sell gas, but you will find amongst those photographs two photographs of shop windows on the white way. The windows on one side of the street

are lighted only by the white way lamps, no light whataver being inside, and you will find rugs and wall papers in most perfect detail, absolutely avoiding any real necessity for inside lights. In the other photograph you will find a show window which is brilliantly lighted inside, and also lighted by the white way lights outside. It causes them to stand out, and makes a very much stronger contrast of the gas. Many people, I think, would want that contrast, the light in that case inside being gas as well as outside.

Mr. Barrows—At one of the State Associations where I was present a short time ago, an association of both gas and electric companies, this question of street lighting, particularly white way lighting, was taken up and gone into very thoroughly, and the decision of both gas and electric companies, principally electric companies, from, I think 6 cities, where white ways are used a great deal, was that the window lighting had increased rather than decreased. At first the window lighting fell off a little, but the merchants soon found that so many more people were brought on to the streets—and this was by actual count—after the white ways had been installed, they felt they could only in justice to themselves increase their window lighting.

On motion [seconded] the thanks of the Association were extended to Mr. Norcross for his volunteer paper. The President added that Mr. Norcross had the thanks of the Association too, and having noted that Mr. H. L. Barnes (Hartford, Conn.), had returned, he asked him to read the paper on

THE INDUSTRIAL GAS APPLIANCE,

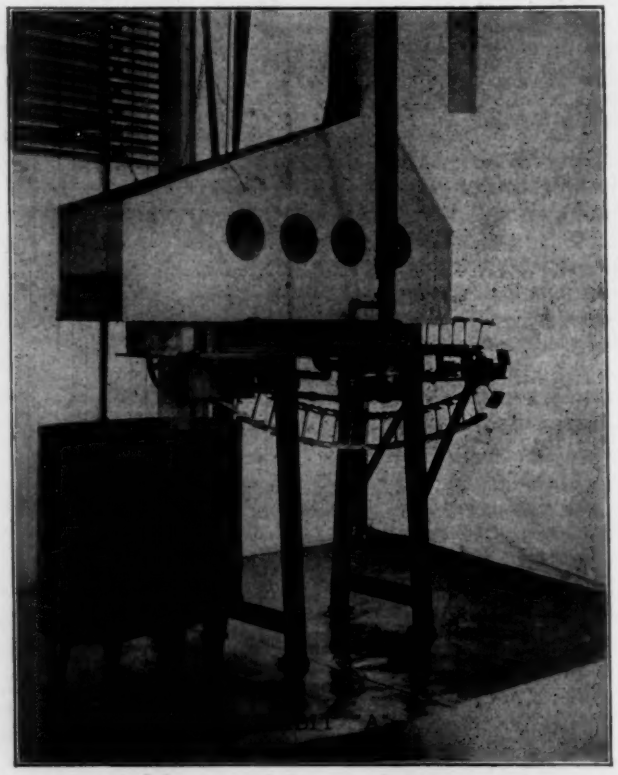
which that gentleman did as follows:

This phrase should have a peculiar charm and awaken a heartfelt interest in us all, and I feel confident that it does. At the same time there is abundant evidence that some of the fraternity have failed to come under the magnetic influence which we are pleased to accord this phase of the gas industry. In a few instances industrial gas has been developed with very gratifying results, but as a movement to be incorporated with the general scheme of commercial advancement, its recognition has been slow, and if I may be permitted to say so, even slower in adoption. Gentlemen, is not the time opportune to give this most important factor of our great industry careful consideration? Is it not now time that we looked reality squarely in the face? When proof is abundant about us that, through this one channel, lies the pathway by which, with a little concerted effort on our part, we may reap the harvest in one of the most productive fields in the scope of the modern gas company.

Our indifference to this subject in the past may be attributed to three general causes. First, there are but few men identified with the gas industry of to-day who have made a careful study of this subject, and who understand the many phases which are encountered in its practice. Second, the average gas company, through its lack of appreciation, has neglected to put forth any special effort to secure the services of, or train a man in this particular field; and, thirdly, the manufacturer himself has failed to grasp the significance of the proposition in relation to the manipulation of his raw material, and the consequent saving to him in the cost of production, due to the fact that the subject may never have been intelligently brought to his attention. Consequently he is content to proceed as the generations before him have proceeded. But I assure you, gentlemen, and I speak from experience, that with hardly an exception every manufacturing concern in New England, wielding raw material and utilizing a heating process of any kind to produce the finished article, if approached in the proper manner, can be made to realize the many convincing proofs that industrial gas will save him money. To corroborate my statements, I will cite several specific instances which have come under my personal observation.

One of the largest and most widely known knitting machine and knitting needle manufacturers in New England for years followed a process for hardening their needles which they considered unsurpassed. Their output was, at that time, approximately 10,000 needles per day, and of this 10,000 about 15 per cent. would eventually come back as defective, a condition which they were unable to overcome due to the ununiformity in hardening. The local gas company after several unsuccessful attempts finally secured their lukewarm attention in a process for hardening, using city gas as the prime factor. At the outset the needle concern felt perfectly assured that the gas company was suffering from some malady closely resembling a brain storm, to entertain the idea that the old process could be improved upon. Notwithstanding this fact, the gas company after a few experiments, built an appliance which not only improved the needle, but quadrupled the production, producing someting over 40,000 needles per day, with a loss of about ½ of 1 per cent. Needless to say the needle company to-day is a strong exponont of industrial gas, with a yearly profit of no small figure not only to themselves, but to the gas company as well.

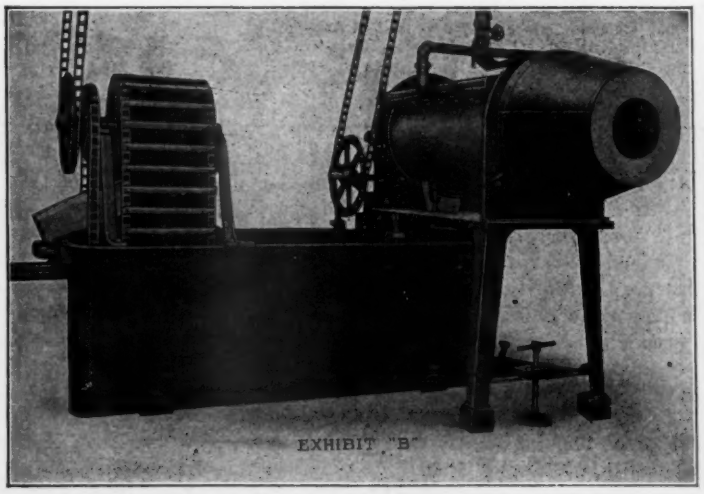
Exhibit "A" shows in some detail the appliance responsible for this



result. The operation of the furnace is quite simple, consisting of an endless chain supporting nickel steel holders on which are placed the needles. The chain in rotating carries the trays through the heating zone, forming a continuous trough. The operator is located at the extreme right of the appliance, placing the needles on the trays as they come into a horizontal position. As they are carried forward through the combustion chamber of the furnace they acquire the correct temperature and are automatically thrown into a vat of oil which may be seen at the extreme left of the picture. This vat of oil is maintained below the flashing point by a small circulating pump which operates in connection with the endless chain. The rate of speed at which the needles pass through the heating chamber may be regulated instantly so that any desired temperature may be imparted to the incoming charge. But one operator is required for the manipulation of this appliance, as against three with the old method.

Another instance which can be brought closely home is found in the familiar horse shoe caulk. A concern doing a fair business in caulks still adhered to the old method of hardening with a coal fire. When the gas company approached them on the industrial gas proposition the general manager treated the matter as a joke, but I am pleased to say that he has since acknowledged that the joke was on him. With the adoption of an automatic gas furnace he has been able to increase his production a hundredfold. The actual production for the calendar year of 1911, was 11,500,000 caulks, which means that there were about 450 tons of metal passed through the furnace with the assistance of but one operator. The furnace operates 24 hours a day continuously for months to accomplish this vast work, maintaining an average temperature of 1,700° F.

Exhibit "B" very clearly outlines the actual appliance alluded to. The caulks are shoved into the barrel-shaped hopper on the right of the picture. The hopper, by its rotating motion, automatically feeds a continuous and even quantity of caulks into the heating chamber, which revolves in an inclined plane. The retort is maintained at a bright cherry red, and the caulks by gravity pass its entire length, a distance of some 3 feet. They then automatically drop into the cooling tank which is shown at right angles to the furnace. This tank is some 6 feet long, 3 feet wide, and 3 feet deep, and is filled with water. It also contains a perforated brass cylinder, which in its turn revolves in an inclined plane, thus carrying the caulks forward to the automatic hoist which appears at the extrene left of the picture. The hoist expels the caulks into a trouh, the outer end of which extends



beyond the extreme end of the tank, at which point the operator places the wooden boxes in which the caulks are shipped. The duties of the operator simply consist of filling the hopper at one end of the appliance, the removal of this finished caulk in the wooden boxes at the other end, and the maintaining of an even temperature in the heating chamber, which is automatically recorded on a 24-hour recording pyrometer.

I assure you, gentlemen, that I am not over-stepping the bounds of truthfulness when I say that this one installation makes the dials on the station meter revolve to the tune of several million annually.

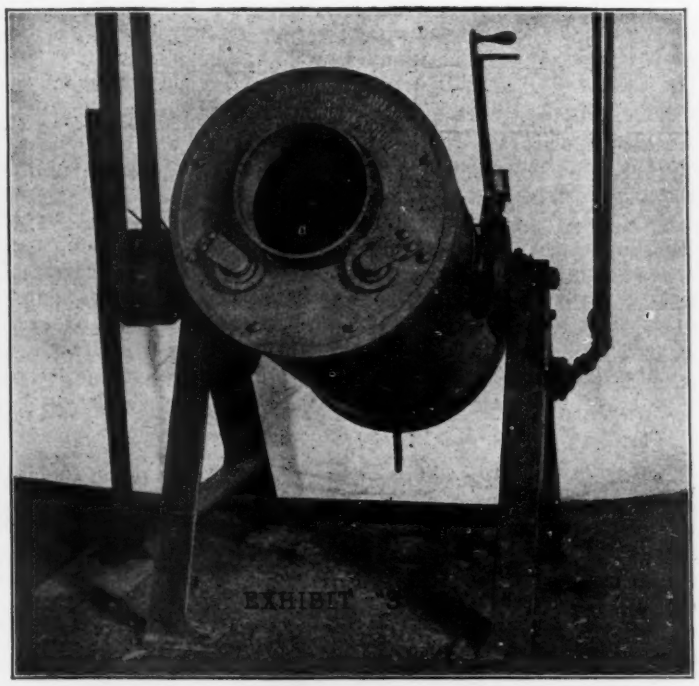
The two remaining installations which I take the liberty of bringing to your attention cover widely different fields, yet both finished products enjoy not only a national but a world-wide reputation. I mention them with a double motive. First, to illustrate that there is practically no limit to the scope of industrial gas as applied to the trades; secondly, to demonstrate to you, gentlemen, that if by good fortune my remarks find sympathy in your future commercial activity, that you should bear patiently with your industrial gas engineer. Gratifying results may not be accomplished at the first issue, but, with consistent and persistent effort on his part, backed by the confidence of your hearty support, he is bound to develop business the returns from which will show you a very satisfactory result on your investment.

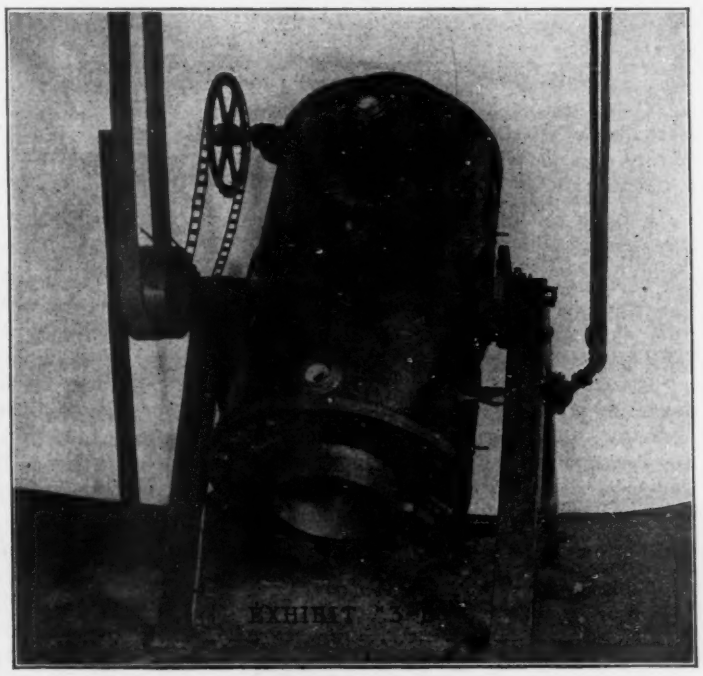
The first of the remaining propositions required 4 years to develop, and the second even a longer period, yet the gas company never gave up hope, with the result that both are now contributing to the dividends of the company. The 4-year prospect has to do with the beautiful, dark-blue finish found on one of the world-famous pistols, which no doubt all of you gentlemen have oft times admired. The method followed for years to produce this finish is what is called a second blue, hand finished, and is accomplished by infinite hand labor extending over a period of several hours and using a charcoal fire as the heating medium. Naturally it was a very difficult matter to produce an absolutely uniform output, as the only check on the operation was the eyesight of the workman, which would vary from day-to-day according to the intensity of the light admitted to the operating room and his own personal feelings.

After 4 years' untiring effort on the part of the gas company, it was able to demonstrate to the fire arms people that a far superior color and finish could be produced with city gas as the prime agent in the process, entirely eliminating the hand labor, and making it possible for one operator to produce unthought of figures as to the daily output.

Exhibits 3-A and 3-B clearly depict the first appliance to accomplish this work, and when I tell you, gentlemen, that within 2 years of the erection of this first appliance the revolver people had increased the installation to 10 machines, representing an initial outlay of something over $7,000, I think you will realize that there is ample food for thought and action in the industrial field.

The remaining proposition touches upon one of the best known typewriters on the market to-day. The company operates one of the largest, if not the largest, manufacturing plants in New England, and for years manufactured its own gas, the major portion of which was used for enameling work. The local gas company had a long struggle to secure this business, but they were eventually successful. It was necessary to construct special enameling oven burners for the installation, which consists of 32 ovens measuring 7 feet wide, 7 feet high and 18 feet long, together with 36 varnish ovens of a somewhat smaller capacity. It required an 8-inch service with two 500-light





meters to supply this demand, and when you consider the yearly consumption, which is figured in the millions, you have a very good answer as to whether or not it pays to embrace this industrial gas theme with your other commercial problems.

In closing, gentlemen, I wish to suggest that each and every one of us have "lurking in our midst," although it may not be apparent at the first glance, an opportunity to dispose of our product through the industrial appliance, which, if handled intelligently and with enthusiasm, will eventually show on the credit side of the cash account with a most pleasing effect when our dividend period arrives.

(To be Continued.)

Management & Commercial Methods.

PUBLICITY WORK, EDISON ELECTRIC ILLUMINATING COMPANY, OF BROOKLYN. PREPARED FOR THE JOURNAL, BY "WELFARE."—The work of the Publicity Department of the Brooklyn (N. Y.) Edison Company may be divided into three classes: Advertising, business getting and welfare work.

Advertising.—Monthly bulletin, 3½ by 6 inches, 12 pages; 30,000 issued each month and one inserted with each bill. Advertising in newspapers, street cars, etc., electric signs and billboards, theater programmes, lectures and addresses before clubs, associations, boards of trade and newspaper articles.

Business Getting.—Elaborate card index system of prospects turned in by sales' department. Follow up system of form letters, illustrated return post cards and pamphlets and photographs on special subjects.

Welfare Work.—Edison Club. The Company maintains a club for employees, equipped with pool and card tables, piano and meeting hall, etc. No dues are charged. The Brooklyn Company Section, N. E. L. A., has about 600 employees as members. Monthly meetings are held, and a monthly "Bulletin" of the "Proceedings," and of other interesting matter, are furnished to members. The "Bulletin" (6 by 9 inches) contains upwards of 80 pages per issue, and is prepared by the advertising manager assisted by the special correspondents in the various divisions of the Company. The members also receive copies of the "Proceedings" of the N. E. L. A. The dues are $5 per annum.

Mutual Benefit Association.—Employees subscribing $7 per annum are insured for $100, and receive free medical attention.

Edison Investment Fund.—Employees can invest savings or a per centage of their salaries, in the securities of the Company, and have been receiving quarterly dividends at the rate of 6 per cent. per annum. Two of the 7 members of the Trustees administering this fund are selected by the employees. There are more than 1,000 employees who are subscribers, and the amount in hand is about $160,000.

Profit Sharing and Service Annuities.—An annual distribution of profits has been awarded to the employees for the past 2 years. Employees of 2 full years' service participate. Employees of 5 full years' and upwards received the maximum, or 8 per cent. of their yearly wages. On January 1, 1911, over $45,000 was credited to 735 employees. The service annuity plan provides for pensions at the age of 65, or earlier at the discretion of the Provident Committee.

Educational.—The principal educational efforts for the present season are covered by several courses in Pratt Institute, and if the student completes course to the satisfaction of the Educational Committee, the entire tuition fee is refunded him by the Company.

Department Organizations.—Sales' department, Brooklyn Edison Engineering Society, Auditing department, Commercial Bureau Club. Each of these organizations meet every other week on Saturday afternoons. Meetings last 1 hour or longer. The Baseball Club and the Field Club have many regular games and contests throughout the season.

Suggestion System.—Employees are encouraged to make suggestions, and are awarded prizes of $10, $5 and $2.50 for those adopted. As many as 81 suggestions per month have been received, and these are investigated by the 17 members of the Company's Executive Council.

"*Lead*" *Book.*—All employees outside of the sales' department are provided with a pocket memorandum book in which the pages are numbered and detachable. The leads consist of information concerning new business, service, etc., and the "leads" are carefully tabulated and followed up. At the end of the year the employees whose leads have resulted in the greatest advantage to the Company receive not only prizes but special consideration.

Management.—The Manager of the Brooklyn Edison Company is, Mr. W. W. Freeman, whose activities as President and as a worker in the National Electric Light Association, have increased his prestige far beyond his home city. The General Contract Agent of the Company is, Mr. T. I. Jones, and the Advertising Manager is, Mr. M. S. Seelman, Jr.—the latter having been connected with that department of the Company for over 14 years.

Recent Patent Issues.

Prepared for the American Gas Light Journal by Royal E. Burnham, solicitor of patents and counselor in patent causes, 833 Bond Building, Washington, D. C., from whom illustrations and specifications of any patent mentioned below may be obtained for 20 cents.

1,021,805. Gas Lighting. P. G. de Schodt, Namur, Belgium.

1,021,967. Incandescent Mantle Holder and Guard. R. E. Bruckner, New York City, and C. A. McCune, Jersey City, N. J., assignors to The Commercial Acetylene Company, New York City.

1,022,133. Inverted Incandescent Mantle. C. K. Harding, Chicago, Ills.

1,022,388. Blower for Gas Producers. A. B. Duff, Pittsburgh, Pa.

Items of Interest
FROM VARIOUS LOCALITIES.

One is sure to find something of comfort and reassurance in the annual reports of President Morris W. Stroud, of the American Gas Company. For instance, that painstaking official, in his annual return to the shareholders for their consideration at the current annual meeting, for the Company's business in 1911, remarks thnt its business for the twelvemonth showed a "Very satisfactory increase over that for the previous year, and the net profits applicable to dividends based upon the amount of capital stock upon which dividends were paid, was over 10½ per cent." This, of course, is comforting; but the reassuring comes in shortly after, that such dividend rate was not earned at the expense of skimping the plants. In the lines reporting that expenditure for plant improvements amounted to $1,113,537.

Recent bookings for holders from the shops of the Cruse-Kemper Company, of Ambler, Pa., include these: The United Gas Improvement Company has contracted for a holder up to retaining 1,250,000 cubic feet, for its Germantown (Phila., Pa.) plant; also, an oil tank, to store 1,000,000 gallons, on the plant of the New Haven (Conn.) Gas Light Company. President Fairchild is evidently out for business.

The Gas Machinery Company, of Cleveland, O., has been awarded a contract for the construction of a 6-foot water gas apparatus set, to be installed in the works of the Lockport (N.Y.) Gas Light Company. This will be a duplicate of the apparatus installed by the Machinery Company for the Lockport folks last fall. Gas was made in that 6-foot apparatus in 45 days from the date of the contract, which is a notably quick construction record, in that the buildings had to be reconstructed and considerable yard piping had to be put down.

"B.," writing from Springfield, Mass., under recent date, incloses the following: "Miss Gertrude Teal, well known from her recent demonstrations in cooking by gas in Chester, Pa., and Tampa, Fla., has been retained by the Old Colony Gas Company, with headquarters in its Weymouth (Mass.) offices. Her services with the corporation date from the 1st inst. Mr. George Goeltz, Manager and Engineer of the Old Colony Company, has planned out an extensive and aggressive campaign for securing new business this season. Anyone who imagines that Mr. Goeltz is not on his job all the time might better change his trend of thought, in order that he may be closer to the right brand of mind stimulator.——Mr. W. S. Farrow, whose record as new business manager for the Cambridge (Mass.) Gas Light Company is an excellent one, has resigned that post in order to direct the new business division of the Hartford City (Conn.) Gas Light Company. The Company is to be congratulated over securing Mr. Farrow's services, which certainly have been of the most meritorious nature. Of course, he has the very best wishes of his Massachusetts friends, and they have the satisfaction of knowing that Hartford is not a far hark. He took up the duties of his new position last Monday.——Brockton has reduced its net selling rate to $1.05 per 1,000, and it is only a matter of short time when old Woburn will be getting its gas supply at $1.25.——Referring to the Brockton concession, I might note that the concession followed a conference between Mayor Howard, Ald. Bragdon and Supt. Morrison. The rate really does not become effective until July 1st, and although it is only 5 cents or so per 1,000, the difference will amount to a large sum when spread over the twelvemonth accounts."

Mr. George Dolley, having resigned as Business Manager of the Peru American (Ind.) Gas Company, is now in charge of the business management of the Logansport and Wabash Valley Gas Company, with headquarters in Logansport. His successor at Peru is Mr. Oscar Rideout.

Advices from London, Ont., dated the 5th inst., are to this effect: "On the 3d inst., by a vote of 324 to 296, the ratepayers of St. Catharines', Canada, decided to purchase, for operation hereafter on municipal account, all the plant and financial obligations of the St. Catharines' Gas Company. While there was no serious opposition at the polling booths, the by-law, which has been before the people several months, was severely criticized in some quarters and by some of the Aldermen. A preculiar incident was that Dr. W. H. Merritt, who is an ex-President of the artificial Company, is also Mayor of the city, and James D. C. Haplin, who alone opposed the measure going to the people, is a Director of the Natural Gas Company, which has

been willing to buy the rival plant for $100,000 in preferred stock in the Natural Gas Company. The maximum price now charged for natural gas is 50 cents net, but the Company has authority under the by law to increase it to 75 cents. It was that factor that carried the by-law to-day, the people believing that the purchase of the other plant will be sufficient check to keep prices at the present figures. Artificial gas will now be used much more extensively in street lighting. At present 186 lights are in use."

MANAGER C. W. TIPPY, of the Dallas (Tex.) Gas Company, has arranged for the extension of its main lines to these suburban districts: Vickery, Belmont, Monarch and Mount Auburn. The Company was obliged to secure a franchise from the County Commissioners Court, to secure itself; but Manager Tippy declares there was very little hardship in this manœuvering, as the people in the named places were petitioning for gas in loud and continued prayer.

THE proprietors of the New Haven (Conn.) Gas Light Company have very properly determined to vigorously contest the proposition emanating from the Board of Health, to have the prepayment gas meter put out of commission, on the ground that it is dangerous to the community. The attempt of the General Assembly to prohibit the use of the prepayment meter throughout the State was soundly defeated. Over 30,000 prepayments are on the New Haven Company's mains.

MR. A. J. MEYER, formerly of the Westchester Lighting Company, with offices at Yonkers, N. Y., has been appointed New Business Manager for the Nassau and Suffolk Lighting Company, with offices at Roosevelt, N. Y.

WE are informed that the North Vancouver Gas and Coke Company, of North Vancouver, British Columbia, acting in conjunction with a London (England) firm, is seeking to obtain from that municipality a franchise for establishing a gas lighting system. And it is also on the tentative table that the city of New Westminster (B. C.) is considering a by-law to appropriate a sum sufficient to establish a gas plant to be operated on municipal account.

THE Brockton (Mass.) Gas Light Company has opened a new appliance store and exhibition rooms in the Goldsmith Building at Randolph, Mass. It is equipped in the very best of style, and, of course, will be under the general supervision of Mr. E. B. Mooney, the Company's New Business Manager.

MR. WARREN HOWELL has been appointed to the position of General Manager of the Hamilton (O.) Gas and Electric Light Company, vice Mr. W. A. Everson. The latter has accepted a responsible position on the staff of the Domhoff & Joyce Company, of Cincinnati.

THE contract for the new generating plant for the Holyoke (Mass.) Municipal gas works has been awarded to the Isbell-Porter Company, of Newark, N. J. This contract virtually means that the Isbell-Porter Company will to all intent reconstruct the coal gas section of the works, in that the agreement provides a new retort house with an ultimate producing capacity of 1,500,000 cubic feet per diem, coal sheds, workshops, etc.

MR. STEPHEN A. SEWALL, industrial fuel expert on the staff of the Denver (Col.) Gas and Electric Company, has been appointed Assistant Secretary of the National Electric Light Association, with headquarters in New York city.

ON the first of the month Manager Titzel, of the Lancaster (Pa.) Gas Light and Fuel Company, issued a notice that, up to April 1st, 1913, a concession of 5 cents per 1,000 cubic feet would rule, as compared with the rate charged during the previous year. This means a scale running from 95 cents per 1,000 to 75 cents per 1,000 cubic feet, with a minimum bill of 25 cents per month. The schedule begins with a monthly consumption (or first 50,000) of 50,000 cubic feet, and ends with statements for quantities in excess of 200,000 cubic feet per month. Manager Titzel further declares that a like concession will be ordered April 7, 1913.

MR. OSCAR L. LEWIS, of Shelbyville, Ills., and others supposedly representing the American Construction Company, of Newton, Ia., have applied to the authorities of Hillsboro, Ills., for the right to there construct and operate a gas works. These parties are the ones who were recently given a franchise for the construction of a plant in Pana, Ills.

DR. IRION, Chairman of the sub-Committee of the Municipal Affairs Committee, Progressive Union, New Orleans, La., have considered the proposition to establish an official inspector for gas and electric meters, and suggests it be provided that the salary of the inspector shall be $3,000 per annum, with provision for the payment of an assistant or assistants, and for the setting up of the necessary apparatus for the task. The measure also directs that all gas and electric meters must be certified to by the inspector before being set. A $5 fine is the penalty for the otherwise placing of a meter. Regarding the proving of gas meters believed to be incorrect, the cost of such inspection shall be $1. If the meter proves fast the Company shall pay the $1; if correct, the charge shall be borne by the complainant. The charge for testing electric meters is put at $1.50 to $3.50, payment on such account to be in accordance with that prescribed for defective gas meters. The electric meter charge, it should be remarked, is based on the amperage thereof. The standard allowable, as between correct and incorrect, is 2 per cent., fast or slow. The gas is also to be tested for heat units (650 is the stipulation), also for purity and illuminating value.

THE New Jersey Board of Public Utility Commissioners has assented to the proposition permitting the amalgamation of the interests of the Penns Grove and the Bridgeport Gas Companies.

THE office operating force of the Roanoke (Va.) Gas Light Company has been thus organized: Office Manager, E. F. Davis, Chester, Pa.; Salesman, H. B. Gray, Wilmington, Del.; Assistant Salesman, B. M. Davis, Roanoke; Lighting Expert, M. E. Hooper; in charge of street work, Wm. Seighman.

THE H. L. Doherty Company has taken over for operation the plants of the Alliance (O.) Gas and Electric Company. This Company is the only one operating in Alliance on artificial lighting account, and is doing so under a charter in perpetuity.

"M. V. W.," writing from New Haven, Conn., under date of the 6th inst., incloses the following: "Under the profit sharing plan adopted by the New Haven Gas Light Company in the Spring of 1908, a distribution for the last quarter was made last Wednesday. Shares to the number of 80 were apportioned, at the rate of $44⅝ per share. At the present time 214 employees are holding 1,106, the market value of which to-day is $49,493.50. Out of its 1,100 and odd employees 267 are participating in the plan. It may not be out-of-place to here outline the scheme again. It is worked out on the basis of an 8 per cent. increase in wages to all employees. Each quarter an 8 per cent. wage increase is credited to every employee on his wages for the preceding 3 months, or at the amount which the Company is disbursing in dividends. When the amounts credited warrant it the employees receive one or more shares of stock which holding is placed to their credit in the books."

MR. HAROLD CURRIER, heretofore Assistant Superintendent of the Clinton (Mass.) Gas Light Company, has accepted the position of new business solicitor for the Northampton (Mass.) Gas Light Company.

MR. GEORGE S. PEARSON, one of the representatives of the Denver (Col.) Gas and Electric Company, has received the appointment of Travelling Sales Manager of the Pacific Gas and Electric Company, with headquarters in San Francisco. This is certainly an important position, and it may be taken for granted that, by the end of the year, Mr. Pearson will have a pretty good knowledge of how things are going in artificial lighting lines along the greatest coast line in the world.

THAT Canada was in for much damage to the distribution systems of its gas companies, through the rigors of the past winter (and those were extra formidable in that section of the country) was patent; but that either good for the city or the Company can come out of the publication of matter like the following—from the fourth leading editorial in the Quebec *Chronicle* for the 8th inst.—we fail to see. The introductory paragraph of the said editorial is: "The recent leaks of gas, and the narrow escapes from death which some have met with, bring home to us once more the serious nature of this menace to human life. In certain parts of the city, notably on the 'Ramparts,' it has simply come to this: Many people are afraid to go to bed, because they are not sure whether they will be alive or not in the morning." That surely is a blunt way of putting it, and it is a certainty that the *Chronicle* is shooting away wide of the mark.

The Market for Gas Securities.

The city gas share market was inclined to the low side in the week, although a very fair volume of business was recorded in connection with Consolidated. However, the figures of the opening to-day (Friday) show that the net trading for the week was done at a loss of ¼ point. The Company's distributing forces are certainly to be congratulated over the wonderful work done in the past fortnight in repairing breaks due to the passing out of the frost from the ground. Some of the work done was almost on the order marvellous.

Brooklyn Union gas holds fairly well, although the quotation of to-day (Friday) at the opening is very much under its real value. Lacledes are steady and Peoples, of Chicago, shows undoubted strength.

Gas Stocks.

Quotations by George W. Close, Broker and Dealer in Gas Stocks.

115 BROADWAY, NEW YORK CITY.

APRIL 15.

☞ All communications will receive particular attention.

☞ The following quotations are based on the par value of $100 per share:

N. Y. City Companies.	Capital.	Par.	Bid.	Asked
Consolidated Gas Co.	$78,177,000	100	144	144½
Central Union Gas Co.—				
1st 5's, due 1972, J. & J.	3,000,000	1,000	103	105
Equitable Gas Light Co.—				
Con. 5's, due 1932, M. & S.	1,000,000	1,000	105	106
Mutual Gas Co.	3,500,000	100	165	175
New Amsterdam Gas Co.—				
1st Con. 5's, due 1948, J. & J.	11,000,000	1,000	101	102½
New York & Richmond Gas				
Co. (Staten Island)	1,500,000	100	35	50
1st Mtg. Gold Bds. 5 p. ct.	1,500,000	—	98¼	100½
New York and East River—				
1st 5's, due 1944, J. & J.	3,500,000	1,000	103	105
Con. 5's, due 1945, J. & J.	1,500,000	—	95	100
Northern Union—				
1st 5's, due 1927, J. & J.	1,250,000	1,000	100	102
Standard	5,000,000	100	60	70
Preferred	5,000,000	100	90	100
1st Mtg. 5's, due 1930, M. & N.	1,500,000	1,000	103	105
The Brooklyn Union	15,000,000	1,000	142½	144
1st Con. 5's, due 1948, M. & N.	15,000,000	—	106¾	107
Yonkers	299,650	500	130	—
Out-of-Town Companies.				
Bay State	50,000,000	50	½	¾
" Income Bonds	2,000,000	1,000	—	75
Binghampton Gas Works	450,000	100	—	—
" 1st Mtg. 5's	509,000	1,000	97	100
Boston United Gas Co.—				
1st Series S. F. Trust	7,000,000	1,000	82	85
2d " " "	3,000,000	1,000	47½	50
Buffalo City Gas Co.	5,500,000	100	5	8
Bonds, 5's	5,250,000	1,000	59	60
Capital, Sacramento	500,000	50	—	35
Bonds (6's)	150,000	1,000	—	—
Chicago Gas Co. Guaranteed				
Gold Bonds	7,660,000	1,000	104	106½
Cincinnati Gas and Electric				
Co.	29,500,000	100	87	90
Columbus (O.) Gas Co., 1st				
Mortgage Bonds	1,500,000	1,000	96	98
Columbus (O.) Gas Lt. &				
Heating Co.	1,682,750	100	90½	91
Preferred	3,026,500	100	75½	80
Consumers, Toronto	2,000,000	50	200	204
Consolidated, Baltimore	13,460,084	—		—
Mortgages, 5's	3,400,000	—		—
General Mortgage 4½	10,661,000	—		—
Con. Gas Co., Baltimore				
City, 4½	2,751,000	—		—
Consolidated Gas Co. of N. J.	1,000,000	100	15	—
Con. Mtg. 5's	976,000	1,000	94	96
Bonds	75,000	—	—	100
Detroit City Gas Co.	6,580,000	—	—	50
Detroit Gas Co., 5's	381,000	1,000	75	80
" Prior Lien 5's	5,619,000	1,000	97	100¼
Equitable Gas & Fuel Co.,				
Chicago, Bonds	2,000,000	1,000	—	101
Essex and Hudson Gas Co.	6,500,000	—	133	136
Fort Wayne	2,000,000	—	—	—
" Bonds	2,000,000	—	55	—
Grand Rapids Gas Light Co.,				
1st Mtg. 5's	1,350,000	1,000	100	101
Hartford	750,000	25	190	200
Hudson County Gas Co., of				
New Jersey	10,500,000	—	130	133
" Bonds, 5's	10,500,000	—	104	106
Indianapolis	2,000,000	—	—	38
" Bonds, 5's	2,650,000	—	104¼	105
Jackson Gas Co.	250,000	50	82	—
" 1st Mtg. 5's	290,000	1,000	91	95
Kansas City Gas Light Co.,				
of Missouri	5,000,000	100	—	86
Bonds, 1st 5's	3,822,000	1,000	99	102
Laclede Gas Co., St. Louis.	10,000,000	100	106¾	107
Preferred	2,500,006	100	114	120
Bonds	10,000,000	1,000	102¼	103
Lafayette Gas Co., Ind.	1,000,000	100	—	60
Bonds	1,000,000	1,000	60	65
Louisville	2,570,000	50	143	145
Madison Gas and Electric Co.				
" 1st Mtg. 6's	400,000	1,000	106	108¾
Massachusetts Gas Companies, of Boston	25,000,000	100	92	92½
Preferred	25,000,000	100	96	97
Montreal Gas Co., Canada	2,000,000	100	218	218¾
Nashville Gas Light Co.	1,000,000	100	110	—
Newark, N. J., Con. Gas Co.	6,000,000	—	97	98
Bonds, 6's	6,000,000	—	127	128
New Haven Gas Co.	2,000,000	25	200	—
Peoples Gas Lt. & Coke Co.,				
Chicago	25,000,000	100	108⅜	108½
1st Mortgage	20,100,000	1,000	102	102½
2d "	2,500,000	1,000	104	—
Rochester Gas & Electric Co.	2,150,000	50	88	—
Preferred	2,150,000	50	118	—
Consolidated 5's	2,000,000	—	104¾	105½
Pacific Gas and Electric Co.	15,500,000	—	56	57
St. Joseph Gas Co.—				
1st Mtg. 5's	1,000,000	1,000	96	98
St. Paul Gas Light Co.	2,500,000	100	—	—
1st Mortgages, 6's	650,000	1,000	104	105
Extension, 6's	600,000	1,000	112½	115
General Mortgage, 5's	3,447,000	1,000	94	96
Syracuse Gas Co., N. Y.	1,975,000	100	50	55
Bonds	2,047,000	1,000	101	103
Washington (D. C.) Gas Co.	1,600,000	200	425	42 ½
1st Mortgage, 6's	600,000	—	—	—
Western Gas Co., Milwaukee	4,000,000	—	—	—
Wilmington (Del.) Gas Co.	600,000	50	—	—

MEETING TIMES OF THE VARIOUS GAS ASSOCIATIONS.

American Gas Institute.—Annual meeting, October 16 to 18, 1912. Marlborough-Blenheim Hotel, Atlantic City, N. J. Officers: President, Ira C. Copley, Aurora, Ills. Secretary, Geo. G. Ramsdell, 29 West 39th st., N. Y. City.

Canadian Gas Association.—Annual meeting and Gas Show, Toronto, Aug 26th to Sept. 7, 1912. Officers President, Arthur Hewitt, Toronto, Ont.; Secretary and Treasurer, John Keillor, Hamilton, Ont.

Empire State Gas and Electric Association.—Annual meeting, New York City, Oct. 191?. Officers: President, R. M. Searle, Rochester, N. Y.; Secretary, C. H. B. Chapin, 29 W. 39th street. New York City.

Gas Meters.—Monthly meetings. Chairman, I. W. Peffly; Secretary, H. Thurston Owens, 42 Pine street, New York City.

Guild of Gas Managers of New England.—Annual meeting, March, 1913. Young's Hotel, Boston; monthly meeting, second Saturday. Officers: President, Walter G. Africa, Manchester, N. H.; Secretary, H. K. Morrison, Brockton, Mass.

Illinois Gas Association.—Annual meeting, time, March———— 1913. Chicago, Ills. Officers: President, H. O. Channon, Quincy, Ills.; Secretary-Treasurer, Horace H. Clark, Chicago, Ills.

Illuminating Engineering Society.—Annual meeting, Sept. ————1912, ———— Meetings of Sections, monthly. Pres't, V. R. Lansingh, New York City; Secretary, Preston S. Millar, 29 W. 39th street, N. Y. City. Sections: New York, Secretary, Albert J. Marshall, 16 East 40th street. New England, Secretary, H. C. Jones, 10 High street, Boston, Mass. Philadelphia, Secretary, L. B. Eichengreen, Broad and Arch streets. Chicago, Secretary, Edward Wray, 105 N. LaSalle street.

Indiana Gas Association.—Annual meeting, March, 1913, Indianapolis. Officers: President, Howard L. Olds, Indianapolis; Vice-President, Wm. Wallace, Lafayette; Secretary-Treasurer, Philmer Eves, Indianapolis.

Iowa District Gas Association.—Annual meeting, time, May, 22, 23 and 24, 1912; Lincoln, Neb. Officers: President, G. W. Clabaugh, Omaha, Neb.; Secretary and Treasurer, G. I. Vincent, Des Moines, Ia.

Kansas Gas, Water and Electric Light Association.—Annual meeting, time, Oct. 17-19. Manhattan, Kas. Officers: President, B. F. Eyer, Manhattan, Kas.; Secretary and Treasurer, J. D. Nicholson, Newton, Kas.

Michigan Gas Association—Annual meeting, time, Sept. ————1912;———— Officers: President, F. W. Blowers, Kalamazoo, Mich; Secretary-Treasurer, Glenn R. Chamberlain, Grand Rapids, Mich.

Missouri Electric Light, Gas, Water Works and Street Railway Association.—Annual meeting, April, 1913; Joplin, Mo. Officers: President, F. E. Murray, Louisiana, Mo.; Secretary and Treasurer, N. J. Cunningham, Springfield, Mo.

National Commercial Gas Association.—Annual meeting, Dec. 2-5, 1912. Atlanta, Ga. Officers: President, C. L. Holman, St. Louis, Mo.; Secretary, Louis Stotz, 29 West 39th street, New York City.

Natural Gas Association.—Annual meeting, May 21-23, 1912, Kansas City, Mo.; Officers: President, A. B. Macbeth, Independence, Kas. Secretary, T. C. Jones, Delaware, O.

New England Gas Association.—Annual meeting, February,————————1913. Boston. Officers: President, D. D Barnum, Worcester, Mass.; Secretary-Treasurer, N. W. Gifford, East Boston, Mass.

New Jersey State Gas Association.—Spring Meeting, April 25, Lakewood, N. J.—President, William H. Pettes, Newark, N. J.; Secretary-Treasurer, Arthur H. Osborn, Belmar, N. J.

Ohio Gas Association.—Annual meeting, February ———, 1913, Columbus, O.; President, John M. Garard, Columbus, O.; Secretary, L. B. Denning, Columbus, O.

Oklahoma Gas, Electric and Railway Association.—President, Noel R. Gascho, Alva Okla.; Secretary, H. V. Bozell, Norman, Okla.

Pacific Coast Gas Association.—Annual meeting, San Diego, Cal., September 17, 18, 19, 1912. Officers: President, W. Baurhyte, Los Angeles, Cal.; Vice President, Henry E. Adams, Stockton, Cal.; Secretary-Treasurer, John A. Britton, 445 Sutter street, San Francisco, Cal.

Pennsylvania Gas Association.—Annual meeting, Williamsport, Pa., April, 1913; Officers, President, W. R. Rhodes, Williamsport, Pa.; Secretary-Treasurer, W. O. Lamson, Jr., West Chester, Pa.

Society of Gas Lighting.—Annual meeting Dec., 18, 1912; monthly meetings, second Thursday. Place, New York City. Officers: President, Fred. S. Benson; Secretary, George G. Ramsdell, 29 West 39th street, New York city

Southern Gas Association.—Annual meeting, April 17-19, 1912, Jacksonville, Fla. Officers: President, H. B. Hoyt, Jacksonville, Fla.; Secretary-Treasurer, E. D. Brewer, Atlanta, Ga.

Southwestern Electrical and Gas Association.—Annual meeting. April 25, 26, 27, 1912, San Antonio, Tex. Officers: President, J. E. Carroll, Beaumont, Tex.; Secretary, D. G. Fisher, Dallas, Tex.

Wisconsin Gas Association.—Annual meeting, May 15 and 16, 1912, Milwaukee, Wis. Officers: President, H. M. Buck, Waukesha, Wis.; Secretary-Treasurer, Henry Harmon, Milwaukee, Wis.